

THE COMPLETE LINE

*UNITED STATES RADIATOR
CORPORATION*

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GENERAL OFFICES, BROADWAY AND GRAND RIVER, DETROIT, MICH.

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FOREWORD

WE take pleasure in presenting the following catalog of our product for the use of those interested in the design and erection of heating apparatus.

The materials herein represented, used in the construction of modern heating plants, embody the result of years of scientific research and manufacturing experience.

These have combined to produce *CAPITOL BOILERS* designed and constructed to collect all available heat from the fuel used for distribution by *UNITED STATES RADIATORS* without loss in transmission.

CAPITOL BOILERS and *UNITED STATES RADIATORS* are made under the most exacting standards and scientific methods known to manufacturers.

All boilers and radiators are assembled, inspected and tested before leaving our factories, insuring material free from defect on arrival at destination.

Our six manufacturing plants, seven distributing warehouses at principal shipping centers, and twelve branch sales offices enable us to serve our patrons without unnecessary delay.

Thus equipped, we solicit the same loyal support of Architects, Engineers and Contractors that has been accorded us in the past.

Your continued recognition will make possible the perfection of our plans for making this Company more proficient in the service of the heating public.

Yours very truly,

UNITED STATES RADIATOR CORPORATION

Detroit, Mich.

June 1st, 1914.

*Prices herein supersede all former lists,
and are subject to change without notice.
Discounts quoted to regular trade only.*

G u a r a n t e e

We absolutely guarantee the published capacities of CAPITOL BOILERS in pounds of steam at the boiler outlet, provided that the area of the vertical smoke flue and its height shall be great enough to provide a sufficient draft to consume with proper combustion the required amount of fuel per hour, and the best grades of anthracite coal are used.

See Basis of Ratings, Page 157

We do not recommend the use of a pipe coil or cast iron section in the fire pot for hot water supply, but advise the use of a separate water heater.

CAPITOL BOILERS AND

187 Steam



187 Water

STEAM

No.	*8-Hour Rating Square Feet	Price List	Height of Water Line Inches	Fire-pot Area Inches	Base Dimensions Inches	Outlets and Inlets Inches
184	400	\$208.00	40½	20 x 17½	25½ x 20¼	2-3
185	550	245.00	40½	20 x 24	25½ x 26½	2-3
186	700	310.00	40½	20 x 30	25½ x 32¾	2-3
187	850	355.00	40½	20 x 36	25½ x 39	2-3

Inclusive of trimmings—HEIGHT, 65 inches ; WIDTH, 36¾ inches.

WATER

184	650	\$198.00	.....	20 x 17½	25½ x 20¼	2-3
185	910	235.00	.....	20 x 24	25½ x 26½	2-3
186	1170	300.00	.....	20 x 30	25½ x 32¾	2-3
187	1430	345.00	.....	20 x 36	25½ x 39	2-3

For smoke pipe and other measurements, see page 22.

Do not bush flow pipe outlets—connect them full size to the main.

Use a larger boiler for soft coal.

BASIS USED FOR ESTABLISHING RATINGS

(Result of Laboratory Tests)

No.	Adequate Fuel (Anthracite) Lbs.	Recharging Reserve Lbs.	Fuel Consumed Lbs.	Evaporation per Lb. Fuel Lbs.	Total Steam Capacity Lbs.	*8-Hour Rating Square Feet
184	119	24	95	8.5	800	400
185	163	33	130	8.5	1100	550
186	207	42	165	8.5	1400	700
187	250	50	200	8.5	1700	850

When fuel is consumed in shorter or longer period the hourly capacity is proportionately increased or decreased.

Chimneys of the size and heights given in table, page 160 should provide sufficient draft for hourly fuel consumption.

To establish 8-hour steam rating in square feet, divide the total steam capacity in pounds by eight and divide by 0.25.

To determine hourly potential energy in B. T. U. divide total steam capacity by eight and multiply by 970.

Hourly potential energy in B. T. U. divided by 240 for steam and 150 for water gives 8-hour rating.

*See Basis of Boiler Ratings, page 157.



227 Steam



227 Water

STEAM

No.	*8-Hour Rating Square Feet	Price List	Height Water Line Inches	Fire-pot Area Inches	Base Dimensions Inches	Outlets and Inlets Inches
225	800	\$340.00	43½	27 x 23	30 x 27	2-3
226	1000	400.00	43½	27 x 29	30 x 33¼	2-3
227	1200	460.00	43½	27 x 35	30 x 39½	2-3
228	1400	520.00	43½	27 x 42	30 x 45¾	3-3

Inclusive of trimmings—HEIGHT, 66½ inches; WIDTH, 44 ½ inches.

WATER

225	1320	\$330.00	.....	27 x 23	30 x 27	2-3
226	1650	390.00	.....	27 x 29	30 x 33¼	2-3
227	1980	450.00	.....	27 x 35	30 x 39½	2-3
228	2310	510.00	.....	27 x 42	30 x 45¾	3-3

For smoke pipe and other measurements, see page 22.

Do not bush flow pipe outlets—connect them full size to the main.

Use a larger boiler for soft coal.

BASIS USED FOR ESTABLISHING RATINGS

(Result of Laboratory Tests)

No.	Adequate Fuel (Anthracite) Lbs.	Recharg- ing Reserve Lbs.	Fuel Consumed Lbs.	Evapora- tion per Lb. Fuel Lbs.	Total Steam Capacity Lbs.	*8-Hour Rating Square Feet
225	237	48	189	8.5	1600	800
226	295	59	236	8.5	2000	1000
227	354	71	283	8.5	2400	1200
228	413	83	330	8.5	2800	1400

When fuel is consumed in shorter or longer period the hourly capacity is proportionately increased or decreased.

Chimneys of the size and heights given in table, page 160, should provide sufficient draft for required hourly consumption.

To establish 8-hour steam rating in square feet, divide the total steam capacity in pounds by eight and divide by 0.25.

To determine hourly potential energy in B. T. U. divide total steam capacity by eight and multiply by 970.

Hourly potential energy in B. T. U. divided by 240 for steam and 150 for water gives 8-hour rating.

*See Basis of Boiler Ratings, page 157.



G278 Steam



G278 Water

STEAM

No.	*8-Hour Rating Square Feet	Price List	Height Water Line Inches	Fire-Pot Area Inches	Base Dimensions Inches	Outlets and Inlets Inches
G 276	1350	\$505.00	45 1/2	32 x 31	36 x 36	2-4
G 277	1650	595.00	45 1/2	32 x 38	36 x 42 3/4	2-4
G 278	1950	685.00	45 1/2	32 x 45	36 x 49 1/2	3-4
G 279	2250	775.00	45 1/2	32 x 51	36 x 56 1/4	3-4

Inclusive of trimmings HEIGHT 72 inches; WIDTH, 50 3/4 inches.

WATER

G 276	2230	\$495.00	.....	32 x 31	36 x 36	2-4
G 277	2720	585.00	.....	32 x 38	36 x 42 3/4	2-4
G 278	3210	675.00	.....	32 x 45	36 x 49 1/2	3-4
G 279	3700	765.00	.....	32 x 51	36 x 56 1/4	3-4

For smoke pipe and other measurements, see page 22.

Do not bush flow pipe outlets—connect them full size to the mains.

Use a larger boiler for soft coal.

BASIS USED FOR ESTABLISHING RATINGS

(Result of Laboratory Tests)

No.	Adequate Fuel (Anthracite) Lbs.	Recharging Reserve Lbs.	Fuel Consumed Lbs.	Evaporation per Lb. Fuel Lbs.	Total Steam Capacity Lbs.	*8-Hour Rating Square Feet
G 276	389	78	311	8.7	2700	1350
G 277	475	95	380	8.7	3300	1650
G 278	561	112	449	8.7	3900	1950
G 279	648	130	518	8.7	4500	2250

When fuel is consumed in shorter or longer period the hourly capacity is proportionately increased or decreased.

Chimneys of the size and heights given in table, page 160, should provide sufficient draft for required hourly consumption.

To establish 8-hour steam rating in square feet divide the total steam capacity in pounds by eight and divide by 0.25.

To determine hourly potential energy in B. T. U., divide total steam capacity by eight and multiply by 970.

Hourly potential energy in B. T. U., divided by 240 for steam and 150 for water gives 8-hour rating.

*See Basis of Boiler Ratings, page 157.



238 Steam



238 Water

STEAM

No.	*8-Hour Rating Square Feet	Price List	Height Water Line Inches	Fire-pot Area Inches	Base Dimensions Inches	Outlets and inlets Inches
235	1900	\$ 670.00	53	37 x 32	41 $\frac{1}{4}$ x 36 $\frac{1}{2}$	2-4
236	2350	797.00	53	37 x 40	41 $\frac{1}{4}$ x 44 $\frac{3}{4}$	2-4
237	2800	905.00	53	37 x 48	41 $\frac{1}{4}$ x 53	2-4
238	3250	995.00	53	37 x 56	41 $\frac{1}{4}$ x 61 $\frac{1}{4}$	3-4
239	3700	1085.00	53	37 x 64	41 $\frac{1}{4}$ x 69 $\frac{1}{2}$	3-4
240	4150	1175.00	53	37 x 72	41 $\frac{1}{4}$ x 77 $\frac{3}{4}$	3-4

Inclusive of trimmings—HEIGHT, 74 inches; WIDTH, 60 $\frac{1}{4}$ inches.

WATER

235	3150	\$ 655.00	.....	37 x 32	41 $\frac{1}{4}$ x 36 $\frac{1}{2}$	2-4
236	3900	782.00	.....	37 x 40	41 $\frac{1}{4}$ x 44 $\frac{3}{4}$	2-4
237	4650	890.00	.....	37 x 48	41 $\frac{1}{4}$ x 53	2-4
238	5450	980.00	.....	37 x 56	41 $\frac{1}{4}$ x 61 $\frac{1}{4}$	3-4
239	6150	1070.00	.....	37 x 64	41 $\frac{1}{4}$ x 69 $\frac{1}{2}$	3-4
240	6900	1160.00	.....	37 x 72	41 $\frac{1}{4}$ x 77 $\frac{3}{4}$	3-4

For smoke pipe and other measurements see page 22.

Do not bush flow pipe outlets—connect them full size to the main.

Use a larger boiler for soft coal.

BASIS USED FOR ESTABLISHING RATINGS

(Result of Laboratory Tests)

No.	Adequate Fuel (Anthracite) Lbs.	Recharging Reserve Lbs.	Fuel Consumed Lbs.	Evap'tion Per Lb. Fuel Lbs.	Total Steam Capacity Lbs.	*8-Hour Rating Sq. Ft.
235	540	108	432	8.8	3800	1900
236	669	134	535	8.8	4700	2350
237	797	160	637	8.8	5600	2800
238	924	185	739	8.8	6500	3250
239	1052	211	841	8.8	7400	3700
240	1180	236	944	8.8	8300	4150

When fuel is consumed in shorter or longer period the hourly capacity is proportionately increased or decreased.

Chimneys of the size and heights given in table page 160 should provide sufficient draft for required hourly fuel consumption.

To establish 8-hour steam rating in square feet divide the total steam capacity in pounds by eight and divide by 0.25.

To determine hourly potential energy in B.T.U., divide total steam capacity by eight and multiply by 970.

Hourly potential energy in B.T.U., divided by 240 for steam and 150 for water, gives 8-hour rating.

When thought necessary on account of draft conditions, the length of grate can be reduced by taking out one or more grate bars and filling in with fire brick.

*See Basis of Boiler Ratings, page 157.

CAPITOL BOILERS AND



WN 278 Steam



WN 278 Water

STEAM

No.	Rating Square Feet	Price List	Height Water Line Inches	Fire-pot Area Inches	Base Dimensions Inches	Outlets and Inlets Inches
WN 276	4550	\$1250.00	66	50 x 45	57 $\frac{3}{4}$ x 49 $\frac{5}{8}$	3-5
WN 277	5475	1435.00	66	50 x 54	57 $\frac{3}{4}$ x 58 $\frac{3}{4}$	3-5
WN 278	6400	1620.00	66	50 x 63	57 $\frac{3}{4}$ x 67 $\frac{7}{8}$	3-5
WN 279	7325	1805.00	66	50 x 72	57 $\frac{3}{4}$ x 77	4-5
WN 280	8250	1990.00	66	50 x 81	57 $\frac{3}{4}$ x 86 $\frac{1}{8}$	4-5
WN 281	9175	2175.00	66	50 x 90	57 $\frac{3}{4}$ x 95 $\frac{1}{4}$	4-5
WN 282	10100	2360.00	66	50 x 99	57 $\frac{3}{4}$ x 104 $\frac{3}{8}$	4-5

Inclusive of trimming—HEIGHT, 97 $\frac{3}{4}$ inches; WIDTH, 82 inches.

WATER

WN 276	7475	\$1230.00	.....	50 x 45	57 $\frac{3}{4}$ x 49 $\frac{5}{8}$	3-5
WN 277	9000	1415.00	.....	50 x 54	57 $\frac{3}{4}$ x 58 $\frac{3}{4}$	3-5
WN 278	10525	1600.00	.....	50 x 63	57 $\frac{3}{4}$ x 67 $\frac{7}{8}$	3-5
WN 279	12050	1785.00	.....	50 x 72	57 $\frac{3}{4}$ x 77	4-5
WN 280	13575	1970.00	.....	50 x 81	57 $\frac{3}{4}$ x 86 $\frac{1}{8}$	4-5
WN 281	15100	2155.00	.....	50 x 90	57 $\frac{3}{4}$ x 95 $\frac{1}{4}$	4-5
WN 282	16625	2340.00	.....	50 x 99	57 $\frac{3}{4}$ x 104 $\frac{3}{8}$	4-5

For smoke pipe and other measurements, see pages 22 and 28.
Do not bush flow pipe outlets—connect them full size to the main.

BASIS USED FOR ESTABLISHING RATINGS

(Result of Laboratory Tests)

No.	Fuel Consumed Per Hour Lbs.	Evaporation Per Lb. Fuel, Lbs.*	Total Steam Capacity Lbs.	*Rating Sq. Ft.
WN 276	127	9	1138	4550
WN 277	153	9	1369	5475
WN 278	178	9	1600	6400
WN 279	204	9	1832	7325
WN 280	230	9	2063	8250
WN 281	255	9	2294	9175
WN 282	281	9	2525	10100

Laboratory Tests have demonstrated that available capacities on these boilers can be increased at least 25% by a corresponding increase in hourly coal consumption while maintaining average evaporative efficiency.

Chimneys of the size and heights given in table on page 160 should provide sufficient draft for required hourly coal consumption.

To establish rating in square feet, divide the total steam capacity in pounds by 0.25.

To determine hourly potential energy in B.T.U., multiply the total steam capacity by 970.

Hourly potential energy in B.T.U., divided by 240 for steam and 150 for water gives rating in square feet.

When so specified we can furnish bridge wall plates thus reducing depth of fire-pot by depth of one or more sections.

*See Basis of Boiler Rating page 157.



625B Steam



625B Water

STEAM

No.	*8-Hour Rating Square Feet	Price List	Height Water Line Inches	Fire-pot Area Inches	Base Dimensions Inches	Outlets and Inlets Inches
525	700	\$310.00	45	25x25½	25½x32	2-4
625	875	363.00	45	25x32	25½x38½	2-4
725	1050	415.00	45	25x38½	25½x45	2-4
825	1225	468.00	45	25x45	25½x51½	2-4

Inclusive of trimmings—HEIGHT, 66 inches; WIDTH, 41 inches.

WATER

525	1150	\$300.00	.....	25x25½	25½x32	2-4
625	1450	353.00	.....	25x32	25½x38½	2-4
725	1725	405.00	.....	25x38½	25½x45	2-4
825	2025	458.00	.....	25x45	25½x51½	2-4

For smoke pipe and other measurements, see page 24.

Do not bush flow pipe outlets—connect them full size to the main.

Use a larger boiler for soft coal.

BASIS USED FOR ESTABLISHING RATINGS

(Result of Laboratory Tests)

No.	Adequate Fuel (Anthracite) Lbs.	Recharg- ing Reserve Lbs.	Fuel Consumed Lbs.	Evapora- tion per Lb. Fuel Lbs.	Total Steam Capacity Lbs.	*8-Hour Rating Square Feet
525	207	42	165	8.5	1400	700
625	258	52	206	8.5	1750	875
725	309	62	247	8.5	2100	1050
825	362	73	289	8.5	2450	1225

When fuel is consumed in shorter or longer period the hourly capacity is proportionately increased or decreased.

Chimneys of the size and heights given in table, page 160, should provide sufficient draft to consume with proper combustion the required amount of fuel per hour.

To establish 8-hour steam rating in square feet, divide the total steam capacity in pounds by eight and divide by 0.25.

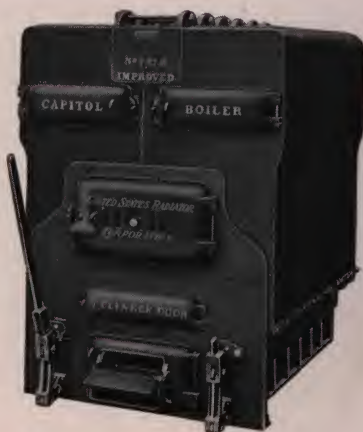
To determine hourly potential energy in B. T. U., divide total steam capacity by eight and multiply by 970.

Hourly potential energy in B. T. U., divided by 240 for steam and 150 for water gives 8-hour rating.

*See Basis of Boiler Ratings, page 157.



737B Steam



737 Water

STEAM

No.	*8-Hour Rating Square Feet	Price List	Height Water Line Inches	Fire-pot Area Inches	Base Dimen- sions Inches	Tappings	
						Flow Inches	Return Inches
1537B	1350	\$505.00	50½	37 x 30	35½x38½	2-4	2-4
537B	1500	550.00	50½	37 x 30	35½x38½	2-4	2-4
1637B	1700	610.00	50½	37 x 37½	35½x46	2-4	2-4
637B	1925	678.00	50½	37 x 37½	35½x46	2-4	2-4
1737B	2150	744.00	50½	37 x 45	35½x53½	3-4	2-4
737B	2375	804.00	50½	37 x 45	35½x53½	3-4	2-4
1837B	2600	859.00	50½	37 x 52½	35½x61	3-4	2-4
837B	2825	910.00	50½	37 x 52½	35½x61	3-4	2-4
1937B	3075	959.00	50½	37 x 60	35½x68½	4-4	2-4
937B	3325	1008.00	50½	37 x 60	35½x68½	4-4	2-4

Inclusive of trimmings—HEIGHT, 72½ inches; WIDTH, 55⅝ inches.

WATER

1537B	2225	\$495.00	.....	37 x 30	35½x38½	2-4	2-4
537B	2475	540.00	.....	37 x 30	35½x38½	2-4	2-4
1637B	2800	600.00	.....	37 x 37½	35½x46	2-4	2-4
637B	3175	668.00	.....	37 x 37½	35½x46	2-4	2-4
1737B	3550	724.00	.....	37 x 45	35½x53½	3-4	3-4
737B	3925	784.00	.....	37 x 45	35½x53½	3-4	3-4
1837B	4300	839.00	.....	37 x 52½	35½x61	3-4	3-4
837B	4650	890.00	.....	37 x 52½	35½x61	3-4	3-4
1937B	5075	939.00	.....	37 x 60	35½x68½	4-4	4-4
937B	5500	988.00	.....	37 x 60	35½x68½	4-4	4-4

For smoke pipe and other measurements, see page 24.

Do not bush flow pipe outlets—connect them full size to the main.

Use a larger boiler for soft coal.

BASIS USED FOR ESTABLISHING RATINGS (Result of Laboratory Tests)

No.	Adequate Fuel (Anthracite) Lbs.	Recharg- ing Reserve Lbs.	Fuel Consumed Lbs.	Evapora- tion per Lb. Fuel Lbs.	Total Steam Capacity Lbs.	*8-Hour Rating Square Feet
1537	398	80	318	8.5	2700	1350
537	432	87	345	8.7	3000	1500
1637	500	100	400	8.5	3400	1700
637	554	111	443	8.7	3850	1925
1737	633	127	506	8.5	4300	2150
737	683	137	546	8.7	4750	2375
1837	765	153	612	8.5	5200	2600
837	813	163	650	8.7	5650	2825
1937	905	181	724	8.5	6150	3075
937	957	192	765	8.7	6650	3325

When fuel is consumed in shorter or longer period the hourly capacity is proportionately increased or decreased.

Chimneys of the size and heights given in table, page 160, should provide sufficient draft for required hourly fuel consumption.

To establish 8-hour steam rating in square feet, divide the total steam capacity in pounds by eight and divide by 0.25.

To determine hourly potential energy in B. T. U., divide total steam capacity by eight and multiply by 970.

Hourly potential energy in B. T. U., divided by 240 for steam and 150 for water gives 8-hour rating.

*See Basis of Boiler Rating, page 157.

CAPITOL BOILERS AND

CAPITOL- WINCHESTER STEAM BOILER



No.	8-Hour Rating Square Feet	List Price	Actual Grate Diam. Inches	Grate Area Square Feet	Height Water Line Inches	Height Outlets Inches	Outlets and Inlets Inches	Smoke Pipe Inches
3130	200	\$114.00	15	1.23	44 $\frac{3}{16}$	49 $\frac{3}{16}$	2-2 $\frac{1}{2}$	6
3140	225	123.00	15	1.23	48 $\frac{3}{16}$	53 $\frac{9}{16}$	2-2 $\frac{1}{2}$	6
3230	250	132.00	17	1.58	44 $\frac{3}{8}$	49 $\frac{1}{2}$	2-2 $\frac{1}{2}$	6
3240	300	149.50	17	1.58	49	54 $\frac{1}{16}$	2-2 $\frac{1}{2}$	6
3330	325	158.00	20	2.18	44 $\frac{3}{16}$	49 $\frac{13}{16}$	2-2 $\frac{1}{2}$	7
3340	375	180.00	20	2.18	49	54 $\frac{3}{4}$	2-2 $\frac{1}{2}$	7
3350	425	199.50	20	2.18	53 $\frac{13}{16}$	59 $\frac{9}{16}$	2-2 $\frac{1}{2}$	7
3440	500	219.50	24 $\frac{1}{2}$	3.27	50 $\frac{5}{8}$	56 $\frac{1}{8}$	2-3	8
3450	575	240.00	24 $\frac{1}{2}$	3.27	55 $\frac{1}{2}$	61	2-3	8
*3460	650	287.50	24 $\frac{1}{2}$	3.27	60 $\frac{5}{16}$	65 $\frac{13}{16}$	2-3	8
3540	750	317.00	29	4.59	52 $\frac{1}{16}$	57 $\frac{9}{16}$	2-4	9
3550	850	346.00	29	4.59	56 $\frac{15}{16}$	62 $\frac{7}{16}$	2-4	9
*3560	950	375.00	29	4.59	61 $\frac{13}{16}$	67 $\frac{5}{16}$	2-4	9
3640	1100	420.00	33	5.94	53 $\frac{9}{16}$	59 $\frac{1}{16}$	2-4	10
3650	1225	455.00	33	5.94	58 $\frac{7}{16}$	63 $\frac{13}{16}$	2-4	10
*3660	1350	492.00	33	5.94	63 $\frac{5}{16}$	68 $\frac{13}{16}$	2-4	10

For other measurements, see page 26.

Boiler trimmings extend 16 inches above outlets.

*Strong draft is necessary when these boilers are used with soft coal.

3600 Series Boilers are equipped with triangular grates only.

BASIS USED FOR ESTABLISHING RATINGS

(Result of Laboratory Tests)

No.	Adequate Fuel Anthracite, Lbs.	Recharging Reserve, Lbs.	Fuel Consumed, Lbs.	Evaporation per Lb., Fuel Lbs.	Total Steam Capacity, Lbs.	*8-Hour Rating, Square Feet	Fuel Available 80% Fuel Capacity, Lbs.
3130	63	13	50	8.00	400	200	60
3140	67	14	53	8.50	450	225	63
3230	74	15	59	8.50	500	250	73
3240	87	18	69	8.75	600	300	85
3330	94	19	75	8.75	650	325	98
3340	105	21	84	9.00	750	375	110
3350	115	23	92	9.25	850	425	120
3440	143	29	114	8.80	1000	500	149
3450	159	32	127	9.10	1150	575	166
3460	174	35	139	9.40	1300	650	181
3540	215	43	172	8.75	1500	750	223
3550	237	48	189	9.00	1700	850	245
3560	258	52	206	9.25	1900	950	266
3640	324	65	259	8.50	2200	1100	299
3650	353	71	282	8.70	2450	1225	325
3660	380	76	304	8.90	2700	1350	350

When fuel is consumed in shorter or longer period the hourly capacity is proportionately increased or decreased.

Chimneys of the size and heights given in table, page 160, should provide sufficient draft for required hourly fuel consumption.

To establish 8-hour steam rating in square feet, divide the total steam capacity in pounds by eight and divide by 0.25.

To determine hourly potential energy in B. T. U., divide total steam capacity by eight and multiply by 970.

Hourly potential energy in B. T. U., divided by 240 for steam and 150 for water gives 8-hour rating.

A larger size of fire-pot is recommended when soft coal is used.

*See Basis of Boiler Ratings, page 157.

**CAPITOL-
WINCHESTER
WATER
BOILER**



No.	8-Hour Rating Square Feet	List Price	Actual Grate Diam. Inches	Grate Area Square Feet	Height Outlets Inches	Outlets and Inlets Inches	Smoke Pipe Inches
4130	325	\$ 96.50	15	1.23	43 $\frac{15}{16}$	2-2 $\frac{1}{2}$	6
4140	375	105.50	15	1.23	47 $\frac{15}{16}$	2-2 $\frac{1}{2}$	6
4230	425	123.00	17	1.58	44 $\frac{1}{4}$	2-2 $\frac{1}{2}$	6
4240	500	140.50	17	1.58	48 $\frac{13}{16}$	2-2 $\frac{1}{2}$	6
4330	550	153.50	20	2.18	44 $\frac{11}{16}$	2-2 $\frac{1}{2}$	7
4340	625	171.00	20	2.18	49 $\frac{1}{2}$	2-2 $\frac{1}{2}$	7
4350	700	191.00	20	2.18	54 $\frac{5}{16}$	2-2 $\frac{1}{2}$	7
4440	825	210.50	24 $\frac{1}{2}$	3.27	50 $\frac{7}{8}$	2-3	8
4450	950	230.00	24 $\frac{1}{2}$	3.27	55 $\frac{3}{4}$	2-3	8
*4460	1075	277.50	24 $\frac{1}{2}$	3.27	60 $\frac{9}{16}$	2-3	8
4540	1225	303.00	29	4.59	52 $\frac{5}{16}$	2-4	9
4550	1400	336.00	29	4.59	57 $\frac{3}{16}$	2-4	9
*4560	1575	365.00	29	4.59	62 $\frac{1}{16}$	2-4	9
4640	1825	410.00	33	5.94	53 $\frac{13}{16}$	2-4	10
4650	2025	442.00	33	5.94	58 $\frac{11}{16}$	2-4	10
*4660	2225	482.00	33	5.94	63 $\frac{9}{16}$	2-4	10

For other measurements, see page 26.

*Strong draft is necessary when these boilers are used with soft coal.

4600 Series Boilers are equipped with triangular grates only.



Sectional View



Rotary Duplex Grate

CAPITOL BOILERS AND

MEASUREMENTS OF 180, 220, G270, 230, WN270 BOILERS

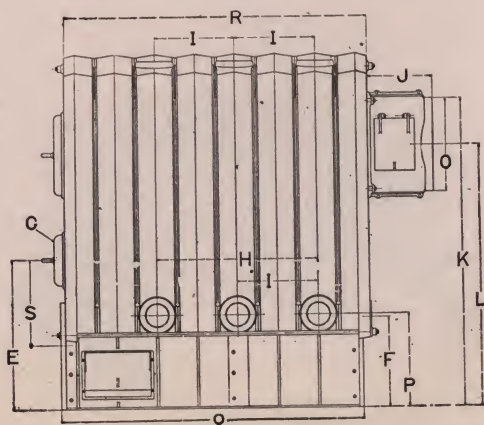
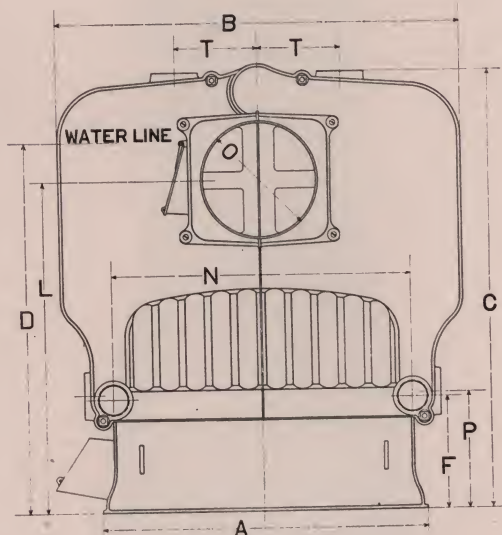


TABLE OF MEASUREMENTS OF 180, 220, G270, 230, WN270 BOILERS IN INCHES

	180	220	G270	230	WN270
A	25½"	30"	36"	41¼"	57¾"
B	28½"	37½"	43½"	48½"	71¾"
C	48"	50¾"	55¾"	65"	77¾"
D	40½"	43½"	45½"	53"	66"
E	25½"	25¾"	27½"	29"	33¾"
F	....	....	....	....	20⅛"
G	7½" x 11½"	8" x 13"	8" x 13"	9¾" x 15¼"	10" x 17"
H	25"	25"	27"	33"	36⅜"
I	12½"	12½"	13½"	16½"	18⅜"
J	12"	14"	16"	14"	15"
†K	44½"	48"	50"	57"	69¼"
†L	....	....	....	50"	58¾"
‡N	....	....	....	....	53¼"
O	10"	12"	14"	14"	21"
P	14¼"	14¾"	16"	17"	20⅞"
Q	184—20½-in.: add 6½-in. for each addition- al section.	225—27-in.: add 6½-in. for each addition- al section.	G276—36-in.: add 6½-in. for each addition- al section.	235—36½-in.: add 8½-in. for each addition- al section.	WN276—49½- in.: add 9½-in. for each addition- al section.
R	184—20½-in.: add 6½-in. for each addition- al section.	225—27-in.: add 6½-in. for each addition- al section.	G276—35¾- in.: add 6½-in. for each addition- al section.	235—37½-in.: add 8½-in. for each addition- al section.	WN276—50⅞- in.: add 9½-in. for each addition- al section.
*S	14¼"	14½"	15½"	18"	19¼"
†T	....	....	....	....	14⅜"

*Center of fire door above grate level.

†Smoke hood has top outlet on 180, 220 and G270 Series.

‡Additional measurements, page 28.

§Back openings must be connected across back of boiler with a pipe not less than 3 inches in diameter.

CAPITOL BOILERS AND

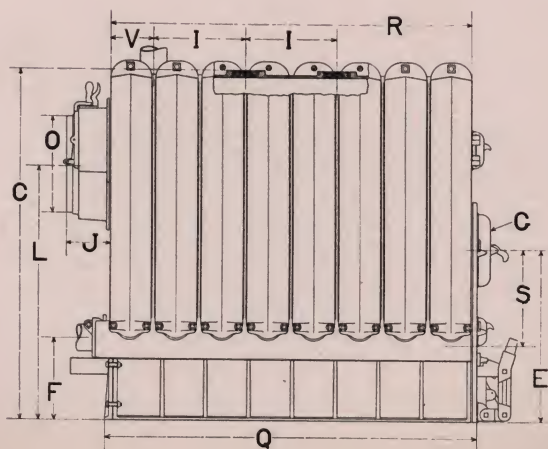
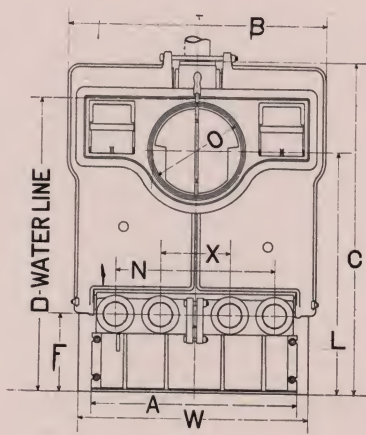
TABLE OF MEASUREMENTS

25B AND 37B SERIES

	25B Series	37B Series
A	25½"	35½"
B	31"	44¾"
C	50½"	57¼"
D	45"	50½"
E	27½"	28"
F	13½"	13½"
G	10"x17"	11"x21"
I	525—13-in. 625-725-825—19½-in.	15"
J	5⅞"	7⅞"
L	40¼"	41¾"
N	16½"	27½"
O	12"	16"
Q	525—32-in. add 6½-in. for each additional section	537—38½-in. add 7½-in. for each additional section
R	525—30⅞-in. add 6½-in. for each additional section	537—36¼-in. add 7½-in. for each additional section
*S	15"	15¼"
V	625—5¼-in. 525-725—11¾-in. 825—18¼-in.	6⅞"
W	29"	39¾"
X	.....	12-in. for 7, 8 and 9 sections only

*Center of fire door above grate level.

CAPITOL SECTIONAL BOILER MEASUREMENTS 25B AND 37B SERIES



CAPITOL BOILERS AND

CAPITOL-WINCHESTER BOILERS

MEASUREMENTS

Steam

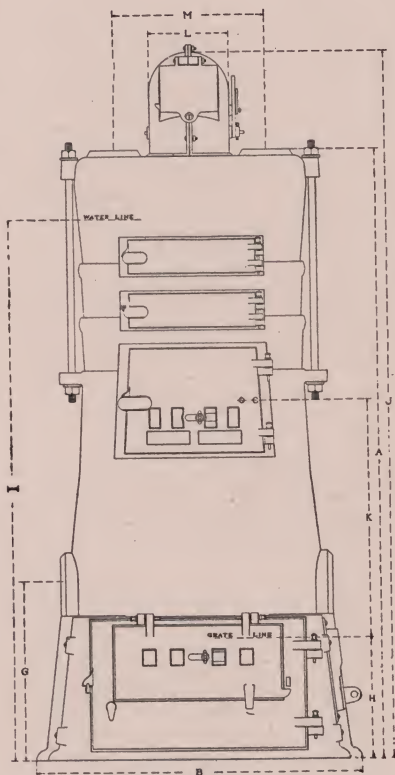
Size	A	B	C	G	H	I	J	K	L	M
3130	49 $\frac{3}{16}$	24 $\frac{1}{4}$	8 x 8	16 $\frac{1}{8}$	8 $\frac{7}{8}$	44 $\frac{3}{16}$	56 $\frac{3}{8}$	23 $\frac{1}{2}$	6	13 $\frac{11}{16}$
3140	53 $\frac{9}{16}$	24 $\frac{1}{4}$	8 x 8	16 $\frac{1}{8}$	8 $\frac{7}{8}$	48 $\frac{3}{16}$	60 $\frac{3}{4}$	23 $\frac{1}{2}$	6	13 $\frac{11}{16}$
3230	49 $\frac{1}{2}$	26 $\frac{1}{4}$	8 x 9	16 $\frac{1}{8}$	8 $\frac{7}{8}$	44 $\frac{3}{2}$	56 $\frac{11}{16}$	23 $\frac{1}{2}$	6	13 $\frac{11}{16}$
3240	54 $\frac{1}{16}$	26 $\frac{1}{4}$	8 x 9	16 $\frac{1}{8}$	8 $\frac{7}{8}$	49	61 $\frac{1}{4}$	23 $\frac{1}{2}$	6	13 $\frac{11}{16}$
3330	49 $\frac{15}{16}$	29 $\frac{5}{16}$	9 x 11	16 $\frac{1}{8}$	8 $\frac{7}{8}$	44 $\frac{3}{16}$	58 $\frac{1}{8}$	23 $\frac{1}{2}$	7	13 $\frac{11}{16}$
3340	54 $\frac{3}{4}$	29 $\frac{5}{16}$	9 x 11	16 $\frac{1}{8}$	8 $\frac{7}{8}$	49	62 $\frac{15}{16}$	23 $\frac{1}{2}$	7	13 $\frac{11}{16}$
3350	59 $\frac{9}{16}$	29 $\frac{5}{16}$	9 x 11	16 $\frac{1}{8}$	8 $\frac{7}{8}$	53 $\frac{13}{16}$	67 $\frac{3}{4}$	23 $\frac{1}{2}$	7	13 $\frac{11}{16}$
3440	56 $\frac{1}{8}$	35	9 x 12	17 $\frac{1}{2}$	9 $\frac{7}{8}$	50 $\frac{5}{8}$	65 $\frac{5}{16}$	24 $\frac{1}{8}$	8	16 $\frac{5}{16}$
3450	61	35	9 x 12	17 $\frac{1}{2}$	9 $\frac{7}{8}$	55 $\frac{1}{2}$	70 $\frac{3}{16}$	24 $\frac{1}{8}$	8	16 $\frac{5}{16}$
3460	65 $\frac{3}{16}$	35	9 x 12	17 $\frac{1}{2}$	9 $\frac{7}{8}$	60 $\frac{1}{2}$	75	24 $\frac{1}{8}$	8	16 $\frac{5}{16}$
3540	57 $\frac{9}{16}$	40	9 x 13	19	10 $\frac{9}{16}$	52 $\frac{1}{16}$	67 $\frac{11}{16}$	24 $\frac{11}{16}$	9	17 $\frac{13}{16}$
3550	62 $\frac{7}{16}$	40	9 x 13	19	10 $\frac{9}{16}$	56 $\frac{15}{16}$	72 $\frac{9}{16}$	24 $\frac{11}{16}$	9	17 $\frac{13}{16}$
3560	67 $\frac{1}{16}$	40	9 x 13	19	10 $\frac{9}{16}$	61 $\frac{1}{8}$	77 $\frac{7}{16}$	24 $\frac{11}{16}$	9	17 $\frac{13}{16}$
3640	59 $\frac{1}{16}$	44 $\frac{3}{4}$	9 x 14	20 $\frac{1}{2}$	12 $\frac{1}{16}$	53 $\frac{9}{16}$	70 $\frac{3}{16}$	24 $\frac{11}{16}$	10	21 $\frac{7}{16}$
3650	63 $\frac{15}{16}$	44 $\frac{3}{4}$	9 x 14	20 $\frac{1}{2}$	12 $\frac{1}{16}$	58 $\frac{7}{16}$	75 $\frac{1}{16}$	24 $\frac{11}{16}$	10	21 $\frac{7}{16}$
3660	68 $\frac{1}{2}$	44 $\frac{3}{4}$	9 x 14	20 $\frac{1}{2}$	12 $\frac{1}{16}$	63 $\frac{5}{16}$	79 $\frac{1}{16}$	24 $\frac{11}{16}$	10	21 $\frac{7}{16}$

CAPITOL-WINCHESTER BOILERS

MEASUREMENTS

Water

Size	A	B	C	G	H	J	K	L	M
4130	43 $\frac{5}{16}$	24 $\frac{1}{4}$	8 x 8	16 $\frac{1}{8}$	8 $\frac{7}{8}$	51 $\frac{1}{8}$	23 $\frac{1}{2}$	6	13 $\frac{11}{16}$
4140	47 $\frac{5}{16}$	24 $\frac{1}{4}$	8 x 8	16 $\frac{1}{8}$	8 $\frac{7}{8}$	55 $\frac{1}{2}$	23 $\frac{1}{2}$	6	13 $\frac{11}{16}$
4230	44 $\frac{1}{4}$	26 $\frac{1}{4}$	8 x 9	16 $\frac{1}{8}$	8 $\frac{7}{8}$	51 $\frac{7}{16}$	23 $\frac{1}{2}$	6	13 $\frac{11}{16}$
4240	48 $\frac{13}{16}$	26 $\frac{1}{4}$	8 x 9	16 $\frac{1}{8}$	8 $\frac{7}{8}$	56	23 $\frac{1}{2}$	6	13 $\frac{11}{16}$
4330	44 $\frac{1}{16}$	29 $\frac{5}{16}$	9 x 11	16 $\frac{1}{8}$	8 $\frac{7}{8}$	52 $\frac{7}{8}$	23 $\frac{1}{2}$	7	13 $\frac{11}{16}$
4340	49 $\frac{1}{2}$	29 $\frac{5}{16}$	9 x 11	16 $\frac{1}{8}$	8 $\frac{7}{8}$	57 $\frac{11}{16}$	23 $\frac{1}{2}$	7	13 $\frac{11}{16}$
4350	54 $\frac{5}{16}$	29 $\frac{5}{16}$	9 x 11	16 $\frac{1}{8}$	8 $\frac{7}{8}$	62 $\frac{1}{2}$	23 $\frac{1}{2}$	7	13 $\frac{11}{16}$
4440	50 $\frac{7}{8}$	35	9 x 12	17 $\frac{1}{2}$	9 $\frac{7}{8}$	60 $\frac{1}{16}$	24 $\frac{1}{8}$	8	16 $\frac{5}{16}$
4450	55 $\frac{3}{4}$	35	9 x 12	17 $\frac{1}{2}$	9 $\frac{7}{8}$	64 $\frac{15}{16}$	24 $\frac{1}{8}$	8	16 $\frac{5}{16}$
4460	60 $\frac{9}{16}$	35	9 x 12	17 $\frac{1}{2}$	9 $\frac{7}{8}$	69 $\frac{3}{4}$	24 $\frac{1}{8}$	8	16 $\frac{5}{16}$
4540	52 $\frac{5}{16}$	40	9 x 13	19	10 $\frac{9}{16}$	62 $\frac{7}{16}$	24 $\frac{11}{16}$	9	17 $\frac{13}{16}$
4550	57 $\frac{3}{16}$	40	9 x 13	19	10 $\frac{9}{16}$	67 $\frac{5}{16}$	24 $\frac{11}{16}$	9	17 $\frac{13}{16}$
4560	62 $\frac{1}{16}$	40	9 x 13	19	10 $\frac{9}{16}$	72 $\frac{3}{16}$	24 $\frac{11}{16}$	9	17 $\frac{13}{16}$
4640	53 $\frac{13}{16}$	44 $\frac{3}{4}$	9 x 14	20 $\frac{1}{2}$	12 $\frac{1}{16}$	64 $\frac{15}{16}$	24 $\frac{11}{16}$	10	21 $\frac{7}{16}$
4650	58 $\frac{11}{16}$	44 $\frac{3}{4}$	9 x 14	20 $\frac{1}{2}$	12 $\frac{1}{16}$	69 $\frac{13}{16}$	24 $\frac{11}{16}$	10	21 $\frac{7}{16}$
4660	63 $\frac{9}{16}$	44 $\frac{3}{4}$	9 x 14	20 $\frac{1}{2}$	12 $\frac{1}{16}$	74 $\frac{11}{16}$	24 $\frac{11}{16}$	10	21 $\frac{7}{16}$

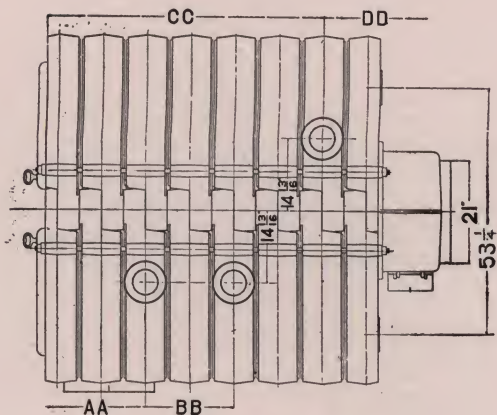


Sectional View

(for Detailed Measurements, see opposite page)

TAPPING MEASUREMENTS

WN270 SERIES



Cut Showing Top of Boiler

MEASUREMENTS IN INCHES

Sections	Right Side		Left Side	
	AA	BB	CC	*DD
6	20 $\frac{11}{16}$"	....	11 $\frac{5}{8}$ "	27 $\frac{1}{4}$ "
7	20 $\frac{11}{16}$ "	18 $\frac{3}{16}$ "	48"	....
8	20 $\frac{11}{16}$ "	18 $\frac{3}{16}$ "	57 $\frac{1}{16}$"	....
9	20 $\frac{11}{16}$ "	27 $\frac{5}{16}$ "	38 $\frac{7}{8}$ "	27 $\frac{5}{16}$ "
10	20 $\frac{11}{16}$ "	36 $\frac{3}{8}$ "	38 $\frac{7}{8}$ "	36 $\frac{3}{8}$ "
11	20 $\frac{11}{16}$ "	45 $\frac{1}{2}$ "	48"	36 $\frac{3}{8}$ "
12	20 $\frac{11}{16}$ "	45 $\frac{1}{2}$ "	48"	45 $\frac{1}{2}$ "

Flow and return tapings are on the same half sections.

*DD.—Distance from center to center of tapings on left side of 276, 279, 280, 281 and 282 Boilers.

The above measurements are subject to variations in assembling.

TRIMMINGS

Trimming for Steam Boilers include Low Pressure Steam Gauge, Water Column, Water Gauge, Try Cocks, Safety Valve and Automatic Damper Regulator. No trimmings are furnished with Water Boilers.

GRATES

All Square Sectional Boilers are provided with shaking and dumping grates suitable for burning all grades of fuel.

TOOLS

Firing tools will be furnished with all boilers listed herein.

COIL OPENINGS

All boilers listed herein have openings provided for the introduction of a pipe coil in fire-box, for heating water for domestic use.

See Note, page 3.

CAPITOL BOILERS AND

Asbestos Cement Required to Cover Boilers 1½ Inches Thick

Number	Pounds	Number	Pounds
184	200	WN276	750
185	225	WN277	850
186	250	WN278	950
187	275	WN279	1050
225	275	WN280	1150
226	300	WN281	1250
227	325	WN282	1350
228	350	525B	220
G276	350	625B	250
G277	400	725B	280
G278	450	825B	320
G279	500	537B and 1537B	350
235	550	637B and 1637B	430
236	610	737B and 1737B	480
237	670	837B and 1837B	550
238	730	937B and 1937B	600
239	790		
240	850		

Amount of Asbestos Cement Required for Covering Capitol-Winchester Boilers 1½ Inches Thick

Steam Number	Water Number	Pounds	Steam Number	Water Number	Pounds
3130	4130	125	3440	4440	200
3140	4140	125	3450	4450	225
			3460	4460	225
3230	4230	150	3540	4540	250
3240	4240	150	3550	4550	275
			3560	4560	300
3330	4330	150	3640	4640	300
3340	4340	175	3650	4650	300
3350	4350	175	3660	4660	325

Sufficient cement for sealing the flues and for making the outside of the Boiler smoke and fire tight is furnished with all United States Boilers. Additional cement for covering the Boiler will be furnished at an extra charge, on special order.

Asbestos should be applied as follows: About twenty-four hours before using, mix with water to the consistency of thin mortar, enough asbestos for the first coat, which should be one-half of the entire thickness of the covering, and cover boiler, throwing on by handfuls with just enough force to make it stick without packing too solidly. The more loosely it is applied the more effective. When the first coat is thoroughly dry, apply the second coat in the same manner, having a thicker consistency. The third coat should be applied with a trowel and brought to a smooth finish. It is important for good results to allow each coat to thoroughly dry before applying the next. A canvas or heavy muslin jacket can now be pasted over the asbestos and made moisture-proof by painting with asphaltum. This will ensure a permanent covering.

Asbestos is supplied in bags containing 50, 75 and 100 pounds each.

TANK HEATERS

Heaters for hot water supply are manufactured in sizes to supply tanks of the following capacities:

2X	. . . . .	60 gallons
119	. . . . .	90 gallons
120	. . . . .	150 gallons
62	. . . . .	200 gallons
63	. . . . .	250 gallons
64	. . . . .	350 gallons

See catalogue illustrating these heaters.

TANK HEATING CAPACITY OF CAPITOL BOILERS

To determine the size of boiler necessary to heat a storage tank, multiply the number of U. S. gallons of water to be heated by the number of degrees the water is to be heated per hour and multiply this product by .0476. The result is the rating in square feet of proper size water boiler.

EXAMPLE:

It is desired to raise the temperature of 325 gallons of water 40 degrees per hour.

$$325 \times 40 \times .0476 = 619 \text{ sq. ft. of water boiler capacity.}$$

A No. 4340 Capitol-Winchester is the nearest size boiler. These boilers will maintain the above rate for a period of eight hours.

RADIATOR PRICE LIST AND RATING PER SECTION IN SQUARE FEET

Height in inches	45	44	38	32	26	23	22	20	18	20	17	14
Price per square foot, cents .	42	42	42	46	50	53	53	57	58	57	59	64
One-column, Steam and Water												
Triton Plain . . . .	..	..	3	2½	2	..	1¾	1½	..	..	..	..
Triton Ornamental . . . .	..	..	3	2½	2	1¾	..	1½	..	..	..	..
Florentine . . . .	..	..	3	2½	2	..	1¾	..	1½	..	..	..
Grecian . . . .	..	..	3	2½	2	1¾	..	1½	..	..	..	..
Two-column, Steam and Water												
Triton Plain	5	..	4	3½	2¾	..	2¼	2	..	..	..	..
Triton Ornamental . . . .	..	5	4	3½	2¾	2¼	..	2	..	..	..	..
Florentine	5	..	4	3½	2¾	..	2¼	..	1¾	..	..	..
Grecian	5	..	4	3½	2¾	2¼	..	2	..	..	..	..
Triton Plain, Hospital	5	..	4	3½	2¾	..	2¼	2	..	..	..	..
Three-column												
Triton Plain	6	..	5	4½	3¾	..	3	2¼	..	..	..	..
Triton Ornamental . . . .	..	6	5	4½	3¾	3¼	..	2¾	2¼	..	..	..
Florentine . . . .	..	6	5	4½	3¾	..	3	..	2¼	..	..	..
Grecian	6	..	5	4½	3¾	3¼	..	2¾	..	..	..	..
Four-column, Steam or Water												
Triton Plain . . . .	..	10	8½	7	5½	..	4½	..	3½	..	..	..
Triton Ornamental . . . .	..	10	8½	7	5½	4½	..	4	3½	..	..	..
Florentine . . . .	..	10	8½	7	5½	..	4½	..	3½	..	..	..
Grecian	10	..	8	6½	5	4¼	..	3½	..	..	..	..
Five-column, Steam or Water												
Triton Plain, Window . . . .	..	..	..	..	..	..	..	..	5½	4¾	4	..
Triton Flue, Steam or Water .	..	..	7	5¾	4½	..	..	3¼	..	..	..	..

ATHENIAN WALL RADIATORS FOR STEAM OR WATER

Extra large section 9 square feet per square foot	\$0.42
Standard section, 7 square feet per square foot . . . . .	.42
Small section, 5 square feet, per square foot . . . . .	.46

PIN INDIRECT RADIATORS FOR STEAM OR WATER

10 foot section, price per section	\$2.70
15 foot section, price per section	4.05
20 foot section, price per section	5.40



NIPPLE CONNECTIONS

All United States Radiators are assembled with extra heavy malleable iron push nipples.

Threaded or screw nipple joints made up with rubber, asbestos, paper or composition washers are not used in any United States Radiators.

Push nipple connections do not need such washers or gaskets to make them tight—they are tapered iron-to-iron joints, permanently tight.

The same push nipple connections are used in all Capitol Boilers and United States Radiators.

Push nipple joints are easily taken apart and as easily put together again—a great advantage where long heavy radiators are handled on polished floors or elevated to upper stories.

TRITON PLAIN ONE-COLUMN RADIATORS

FOR STEAM AND WATER



Each section is $4\frac{1}{2}$ inches wide. Width of legs, $5\frac{1}{4}$ inches.

THIS pattern of One-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid, for steam and water, page 83.

TRITON PLAIN ONE-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length Inches	Heating Surface				
		38 Inch Height 3 Square Feet per Section	32 Inch Height 2 1/2 Square Feet per Section	26 Inch Height 2 Square Feet per Section	22 Inch Height 1 3/4 Square Feet per Section	20 Inch Height 1 1/2 Square Feet per Section
2	5	6	5	4	3 1/3	3
3	7 1/2	9	7 1/2	6	5	4 1/2
4	10	12	10	8	6 2/3	6
5	12 1/2	15	12 1/2	10	8 1/3	7 1/2
6	15	18	15	12	10	9
7	17 1/2	21	17 1/2	14	11 2/3	10 1/2
8	20	24	20	16	13 1/3	12
9	22 1/2	27	22 1/2	18	15	13 1/2
10	25	30	25	20	16 2/3	15
11	27 1/2	33	27 1/2	22	18 1/3	16 1/2
12	30	36	30	24	20	18
13	32 1/2	39	32 1/2	26	21 2/3	19 1/2
14	35	42	35	28	23 1/3	21
15	37 1/2	45	37 1/2	30	25	22 1/2
16	40	48	40	32	26 2/3	24
17	42 1/2	51	42 1/2	34	28 1/3	25 1/2
18	45	54	45	36	30	27
19	47 1/2	57	47 1/2	38	31 2/3	28 1/2
20	50	60	50	40	33 1/3	30
21	52 1/2	63	52 1/2	42	35	31 1/2
22	55	66	55	44	36 2/3	33
23	57 1/2	69	57 1/2	46	38 1/3	34 1/2
24	60	72	60	48	40	36
25	62 1/2	75	62 1/2	50	41 2/3	37 1/2

Above radiators are tapped 2 inches and bushed as per list, page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiators.

See list prices, page 32.

Made at Dunkirk and Edwardsville Plants

TRITON PLAIN TWO - COLUMN RADIATORS

FOR STEAM AND WATER



Each section is $7\frac{1}{8}$ inches wide. Width of legs, $7\frac{1}{4}$ inches.

THIS pattern of Two-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid (excepting 45-inch height), for steam and water, page 83; Direct-Indirect, for steam and water, page 72; and Hospital pattern, page 70.

TRITON PLAIN TWO-COLUMN RADIATORS

LIST OF SIZES

No. of Sections	*Length Inches	Heating Surface					
		45 Inch Height 5 Sq. Feet per Sect'n	38 Inch Height 4 Sq. Feet per Sect'n	32 Inch Height 3 1/4 Square Feet per Section	26 Inch Height 2 3/4 Square Feet per Section	22 Inch Height 2 1/4 Square Feet per Section	20 Inch Height 2 Square Feet per Section
2	5	10	8	6 2/3	5 1/3	4 1/2	4
3	7 1/2	15	12	10	8	6 3/4	6
4	10	20	16	13 1/3	10 2/3	9	8
5	12 1/2	25	20	16 2/3	13 1/3	11 1/4	10
6	15	30	24	20	16	13 1/2	12
7	17 1/2	35	28	23 1/3	18 2/3	15 3/4	14
8	20	40	32	26 2/3	21 1/3	18	16
9	22 1/2	45	36	30	24	20 1/4	18
10	25	50	40	33 1/3	26 2/3	22 1/2	20
11	27 1/2	55	44	36 2/3	29 1/3	24 3/4	22
12	30	60	48	40	32	27	24
13	32 1/2	65	52	43 1/3	34 2/3	29 1/4	26
14	35	70	56	46 2/3	37 1/3	31 1/2	28
15	37 1/2	75	60	50	40	33 3/4	30
16	40	80	64	53 1/3	42 2/3	36	32
17	42 1/2	85	68	56 2/3	45 1/3	38 1/4	34
18	45	90	72	60	48	40 1/2	36
19	47 1/2	95	76	63 1/3	50 2/3	42 3/4	38
20	50	100	80	66 2/3	53 1/3	45	40
21	52 1/2	105	84	70	56	47 1/4	42
22	55	110	88	73 1/3	58 2/3	49 1/2	44
23	57 1/2	115	92	76 2/3	61 1/3	51 3/4	46
24	60	120	96	80	64	54	48
25	62 1/2	125	100	83 1/3	66 2/3	56 1/4	50

Above radiators tapped 2 inches and bushed, as per list on page 91

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiators.

See list prices, page 32.

Made at Dunkirk and Edwardsville Plants

TRITON PLAIN THREE-COLUMN RADIATORS

FOR STEAM AND WATER



Each section is 9 inches wide. Width of legs, $9\frac{1}{16}$ inches

THIS pattern of Three-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid (excepting 45-inch height), for steam and water, page 83; Direct-Indirect, for steam and water, page 72.

TRITON PLAIN THREE-COLUMN RADIATORS

LIST OF SIZES

No. of Sec- tions	*Length Inches	Heating Surface					
		45 Inch Height 6 Sq. Feet per Sect'n	38 Inch Height 5 Sq. Feet per Sect'n	32 Inch Height 4 1/2 Square Feet per Section	26 Inch Height 3 3/4 Square Feet per Section	22 Inch Height 3 Square Feet per Section	18 Inch Height 2 1/4 Square Feet per Section
2	5	12	10	9	7 1/2	6	4 1/2
3	7 1/2	18	15	13 1/2	11 1/4	9	6 3/4
4	10	24	20	18	15	12	9
5	12 1/2	30	25	22 1/2	18 3/4	15	11 1/4
6	15	36	30	27	22 1/2	18	13 1/2
7	17 1/2	42	35	31 1/2	26 1/4	21	15 3/4
8	20	48	40	36	30	24	18
9	22 1/2	54	45	40 1/2	33 3/4	27	20 1/4
10	25	60	50	45	37 1/2	30	22 1/2
11	27 1/2	66	55	49 1/2	41 1/4	33	24 3/4
12	30	72	60	54	45	36	27
13	32 1/2	78	65	58 1/2	48 3/4	39	29 1/4
14	35	84	70	63	52 1/2	42	31 1/2
15	37 1/2	90	75	67 1/2	56 1/4	45	33 3/4
16	40	96	80	72	60	48	36
17	42 1/2	102	85	76 1/2	63 3/4	51	38 1/4
18	45	108	90	81	67 1/2	54	40 1/2
19	47 1/2	114	95	85 1/2	71 1/4	57	42 3/4
20	50	120	100	90	75	60	45
21	52 1/2	126	105	94 1/2	78 3/4	63	47 1/4
22	55	132	110	99	82 1/2	66	49 1/2
23	57 1/2	138	115	103 1/2	86 1/4	69	51 3/4
24	60	144	120	108	90	72	54
25	62 1/2	150	125	112 1/2	93 3/4	75	56 1/4

Above radiators tapped 2 inches and bushed, as per list page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiators.

See list prices, page 32.

Made at Dunkirk and Edwardsville Plants

TRITON PLAIN FOUR-COLUMN RADIATORS

FOR STEAM OR WATER



Each section is $12\frac{1}{2}$ inches wide. Width of legs, $12\frac{11}{16}$ inches.

THIS pattern of Four-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid (excepting 44-inch height), for steam and water, page 83.

TRITON PLAIN FOUR-COLUMN RADIATORS

LIST OF SIZES

No. of Sec- tions	*Length Inches	Heating Surface					
		44 Inch Height 10 Sq. Feet per Sect'n	38 Inch Height 8 ½ Square Feet per Section	32 Inch Height 7 Sq. Feet per Sect'n	26 Inch Height 5 ½ Square Feet per Section	22 Inch Height 4 ½ Square Feet per Section	18 Inch Height 3 ½ Square Feet per Section
2	6	20	17	14	11	9	7
3	9	30	25½	21	16½	13½	10½
4	12	40	34	28	22	18	14
5	15	50	42½	35	27½	22½	17½
6	18	60	51	42	33	27	21
7	21	70	59½	49	38½	31½	24½
8	24	80	68	56	44	36	28
9	27	90	76½	63	49½	40½	31½
10	30	100	85	70	55	45	35
11	33	110	93½	77	60½	49½	38½
12	36	120	102	84	66	54	42
13	39	130	110½	91	71½	58½	45½
14	42	140	119	98	77	63	49
15	45	150	127½	105	82½	67½	52½
16	48	160	136	112	88	72	56
17	51	170	144½	119	93½	76½	59½
18	54	180	153	126	99	81	63
19	57	190	161½	133	104½	85½	66½
20	60	200	170	140	110	90	70
21	63	210	178½	147	115½	94½	73½
22	66	220	187	154	121	99	77
23	69	230	195½	161	126½	103½	80½
24	72	240	204	168	132	108	84
25	75	250	212½	175	137½	112½	87½

Above radiators are tapped 2 inches and bushed, as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow ½ inch for each bushing in estimating length of radiators.

See list prices, page 32.

Made at Dunkirk and Edwardsville Plants

TRITON FIVE-COLUMN WINDOW RADIATOR

FOR STEAM OR WATER



Each section is 13 inches wide. Width of legs, 13 inches.

THIS pattern of Five-Column Radiators is also made in the following special form only: Legs extra high, solid, for steam and water, page 83.

TRITON FIVE-COLUMN WINDOW RADIATORS

LIST OF SIZES

Number of Sections	*Length Inches	Heating Surface		
		20 Inches Height 5 1/2 Square Feet per Section	17 Inches Height 4 3/4 Square Feet per Section	14 Inches Height 4 Square Feet per Section
2	6	11	9 1/2	8
3	9	16 1/2	14 1/4	12
4	12	22	19	16
5	15	27 1/2	23 3/4	20
6	18	33	28 1/2	24
7	21	38 1/2	33 1/4	28
8	24	44	38	32
9	27	49 1/2	42 3/4	36
10	30	55	47 1/2	40
11	33	60 1/2	52 1/4	44
12	36	66	57	48
13	39	71 1/2	61 3/4	52
14	42	77	66 1/2	56
15	45	82 1/2	71 1/4	60
16	48	88	76	64
17	51	93 1/2	80 3/4	68
18	54	99	85 1/2	72
19	57	104 1/2	90 1/4	76
20	60	110	95	80
21	63	115 1/2	99 3/4	84
22	66	121	104 1/2	88
23	69	126 1/2	109 1/4	92
24	72	132	114	96
25	75	137 1/2	118 3/4	100

Above radiators are tapped 2 inches and bushed, as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiators.

See list prices, page 32.

Made at Dunkirk and Edwardsville Plants

**TRITON ONE-COLUMN RADIATORS
ORNAMENTAL**

FOR STEAM AND WATER



Each section is $4\frac{1}{2}$ inches wide. Width of Legs, $5\frac{1}{4}$ inches.

THIS pattern of One-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid, for steam and water, page 83.

TRITON ONE-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length Inches	Heating Surface				
		38 Inches Height 3 Square Feet per Section	32 Inches Height 2½ Square Feet per Section	26 Inches Height 2 Square Feet per Section	23 Inches Height 1⅔ Square Feet per Section	20 Inches Height 1½ Square Feet per Section
2	5	6	5	4	3⅓	3
3	7½	9	7½	6	5	4½
4	10	12	10	8	6⅔	6
5	12½	15	12½	10	8⅓	7½
6	15	18	15	12	10	9
7	17½	21	17½	14	11⅔	10½
8	20	24	20	16	13⅓	12
9	22½	27	22½	18	15	13½
10	25	30	25	20	16⅔	15
11	27½	33	27½	22	18⅓	16½
12	30	36	30	24	20	18
13	32½	39	32½	26	21⅔	19½
14	35	42	35	28	23⅓	21
15	37½	45	37½	30	25	22½
16	40	48	40	32	26⅔	24
17	42½	51	42½	34	28⅓	25½
18	45	54	45	36	30	27
19	47½	57	47½	38	31⅔	28½
20	50	60	50	40	33⅓	30
21	52½	63	52½	42	35	31½
22	55	66	55	44	36⅔	33
23	57½	69	57½	46	38⅓	34½
24	60	72	60	48	40	36
25	62½	75	62½	50	41⅔	37½

Above radiators tapped 1½ inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow ½ inch for each bushing in estimating length of radiator.

See list prices, page 32.

Made at Dunkirk Plant

TRITON TWO-COLUMN RADIATORS

ORNAMENTAL

FOR STEAM AND WATER



Each section is $7\frac{1}{4}$ inches wide. Width of legs, $8\frac{1}{4}$ inches.

THIS pattern of Two-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid (excepting 44-inch height), for steam and water, page 83.

TRITON TWO-COLUMN RADIATORS

LIST OF SIZES

Numb'r of Sections	*Length Inches	Heating Surface					
		44 In. Height 5 Sq. Ft per Section	38 In. Height 4 Sq. Ft per Section	32 Inches Height 3 1/3 Square Feet per Section	26 Inches Height 2 2/3 Square Feet per Section	23 Inches Height 2 1/3 Square Feet per Section	20 In. Height 2 Sq. Ft per Section
2	5	10	8	6 2/3	5 1/3	4 2/3	4
3	7 1/2	15	12	10	8	7	6
4	10	20	16	13 1/3	10 2/3	9 1/3	8
5	12 1/2	25	20	16 2/3	13 1/3	11 2/3	10
6	15	30	24	20	16	14	12
7	17 1/2	35	28	23 1/3	18 2/3	16 1/3	14
8	20	40	32	26 2/3	21 1/3	18 2/3	16
9	22 1/2	45	36	30	24	21	18
10	25	50	40	33 1/3	26 2/3	23 1/3	20
11	27 1/2	55	44	36 2/3	29 1/3	25 2/3	22
12	30	60	48	40	32	28	24
13	32 1/2	65	52	43 1/3	34 2/3	30 1/3	26
14	35	70	56	46 2/3	37 1/3	32 2/3	28
15	37 1/2	75	60	50	40	35	30
16	40	80	64	53 1/3	42 2/3	37 1/3	32
17	42 1/2	85	68	56 2/3	45 1/3	39 2/3	34
18	45	90	72	60	48	42	36
19	47 1/2	95	76	63 1/3	50 2/3	44 1/3	38
20	50	100	80	66 2/3	53 1/3	46 2/3	40
21	52 1/2	105	84	70	56	49	42
22	55	110	88	73 1/3	58 2/3	51 1/3	44
23	57 1/2	115	92	76 2/3	61 1/3	53 2/3	46
24	60	120	96	80	64	56	48
25	62 1/2	125	100	83 1/3	66 2/3	58 1/3	50

Above radiators tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiator.

See list prices, page 32.

Made at Dunkirk Plant

TRITON THREE-COLUMN RADIATORS**ORNAMENTAL****FOR STEAM AND WATER**

Each section is $9\frac{1}{8}$ inches wide. Width of legs, $10\frac{1}{8}$ inches.

THIS pattern of Three-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid (excepting 44-inch height), for steam and water, page 83.

TRITON THREE-COLUMN RADIATORS

LIST OF SIZES

No. of Sec- tions	*Leng'h Inches	Heating Surface						
		44 Inches Height 6 Sq. Feet per Sect'n	38 Inches Height 5 Sq. Feet per Sect'n	32 Inches Height 4 1/2 Sq. Feet per Section	26 Inches Height 3 3/4 Sq. Feet per Section	23 Inches Height 3 1/4 Sq. Feet per Section	20 Inches Height 2 3/4 Sq. Feet per Section	18 Inches Height 2 1/4 Sq. Feet per Section
2	5	12	10	9	7 1/2	6 1/2	5 1/2	4 1/2
3	7 1/2	18	15	13 1/2	11 1/4	9 3/4	8 1/4	6 3/4
4	10	24	20	18	15	13	11	9
5	12 1/2	30	25	22 1/2	18 3/4	16 1/4	13 3/4	11 1/4
6	15	36	30	27	22 1/2	19 1/2	16 1/2	13 1/2
7	17 1/2	42	35	31 1/2	26 1/4	22 3/4	19 1/4	15 3/4
8	20	48	40	36	30	26	22	18
9	22 1/2	54	45	40 1/2	33 3/4	29 1/4	24 3/4	20 1/4
10	25	60	50	45	37 1/2	32 1/2	27 1/2	22 1/2
11	27 1/2	66	55	49 1/2	41 1/4	35 3/4	30 1/4	24 3/4
12	30	72	60	54	45	39	33	27
13	32 1/2	78	65	58 1/2	48 3/4	42 1/4	35 3/4	29 1/4
14	35	84	70	63	52 1/2	45 1/2	38 1/2	31 1/2
15	37 1/2	90	75	67 1/2	56 1/4	48 3/4	41 1/4	33 3/4
16	40	96	80	72	60	52	44	36
17	42 1/2	102	85	76 1/2	63 3/4	55 1/4	46 3/4	38 1/4
18	45	108	90	81	67 1/2	58 1/2	49 1/2	40 1/2
19	47 1/2	114	95	85 1/2	71 1/4	61 3/4	52 1/4	42 3/4
20	50	120	100	90	75	65	55	45
21	52 1/2	126	105	94 1/2	78 3/4	68 1/4	57 3/4	47 1/4
22	55	132	110	99	82 1/2	71 1/2	60 1/2	49 1/2
23	57 1/2	138	115	103 1/2	86 1/4	74 3/4	63 1/4	51 3/4
24	60	144	120	108	90	78	66	54
25	62 1/2	150	125	112 1/2	93 3/4	81 1/4	68 3/4	56 1/4

Above radiators tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiator.

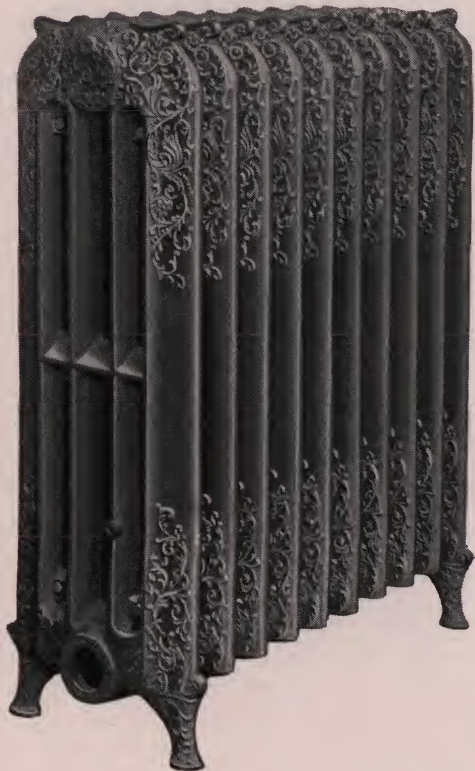
See list prices, page 32.

Made at Dunkirk Plant

TRITON FOUR-COLUMN RADIATORS

ORNAMENTAL

FOR STEAM OR WATER



Each section is $12\frac{3}{4}$ inches wide. Width of legs, $13\frac{3}{4}$ inches.

THIS pattern of Four-Column Radiators is also made in the following special form only: Legs extra high, solid (excepting 44-inch height), for steam and water, page 82.

TRITON FOUR-COLUMN RADIATORS

LIST OF SIZES

No. of Sections	*Leng'h Inches	Heating Surface						
		44 Inches Height 10 Sq. Feet per Sect'n	38 Inches Height 8 1/2 Sq. Feet per Section	32 Inches Height 7 Sq. Feet per Sect'n	26 Inches Height 5 1/2 Sq. Feet per Section	23 Inches Height 4 1/2 Sq. Feet per Section	20 Inches Height 4 Sq. Feet per Section	18 Inches Height 3 1/2 Sq. Feet per Section
2	6	20	17	14	11	9	8	7
3	9	30	25 1/2	21	16 1/2	13 1/2	12	10 1/2
4	12	40	34	28	22	18	16	14
5	15	50	42 1/2	35	27 1/2	22 1/2	20	17 1/2
6	18	60	51	42	33	27	24	21
7	21	70	59 1/2	49	38 1/2	31 1/2	28	24 1/2
8	24	80	68	56	44	36	32	28
9	27	90	76 1/2	63	49 1/2	40 1/2	36	31 1/2
10	30	100	85	70	55	45	40	35
11	33	110	93 1/2	77	60 1/2	49 1/2	44	38 1/2
12	36	120	102	84	66	54	48	42
13	39	130	110 1/2	91	71 1/2	58 1/2	52	45 1/2
14	42	140	119	98	77	63	56	49
15	45	150	127 1/2	105	82 1/2	67 1/2	60	52 1/2
16	48	160	136	112	88	72	64	56
17	51	170	144 1/2	119	93 1/2	76 1/2	68	59 1/2
18	54	180	153	126	99	81	72	63
19	57	190	161 1/2	133	104 1/2	85 1/2	76	66 1/2
20	60	200	170	140	110	90	80	70
21	63	210	178 1/2	147	115 1/2	94 1/2	84	73 1/2
22	66	220	187	154	121	99	88	77
23	69	230	195 1/2	161	126 1/2	103 1/2	92	80 1/2
24	72	240	204	168	132	108	96	84
25	75	250	212 1/2	175	137 1/2	112 1/2	100	87 1/2

Above radiators tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tappings, page 183.

*Allow 1/2 inch for each bushing in estimating length of radiator.

See list prices, page 32.

Made at Dunkirk Plant

FLORENTINE ONE-COLUMN RADIATORS

FOR STEAM AND WATER



Each Section is $4\frac{1}{2}$ inches wide. Width of legs, $5\frac{1}{2}$ inches.

THIS pattern of One-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82. Legs extra high, solid, for steam and water, page 83.

FLORENTINE ONE-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length Inches	Heating Surface				
		38 Inches Height 3 Square Feet per Section	32 Inches Height 2½ Square Feet per Section	26 Inches Height 2 Square Feet per Section	22 Inches Height 1⅔ Square Feet per Section	18 Inches Height 1½ Square Feet per Section
2	5	6	5	4	3⅓	2⅔
3	7½	9	7½	6	5	4
4	10	12	10	8	6⅔	5⅓
5	12½	15	12½	10	8⅓	6⅔
6	15	18	15	12	10	8
7	17½	21	17½	14	11⅔	9⅓
8	20	24	20	16	13⅓	10⅔
9	22½	27	22½	18	15	12
10	25	30	25	20	16⅔	13⅓
11	27½	33	27½	22	18⅓	14⅔
12	30	36	30	24	20	16
13	32½	39	32½	26	21⅔	17⅓
14	35	42	35	28	23⅓	18⅔
15	37½	45	37½	30	25	20
16	40	48	40	32	26⅔	21⅓
17	42½	51	42½	34	28⅓	22⅔
18	45	54	45	36	30	24
19	47½	57	47½	38	31⅔	25⅓
20	50	60	50	40	33⅓	26⅔
21	52½	63	52½	42	35	28
22	55	66	55	44	36⅔	29⅓
23	57½	69	57½	46	38⅓	30⅔
24	60	72	60	48	40	32
25	62½	75	62½	50	41⅔	33⅓

Above radiators tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow ½ inch for each bushing in estimating length of radiator.

See list prices, page 32.

Made at Edwardsville Plant

FLORENTINE TWO-COLUMN RADIATORS

FOR STEAM AND WATER



Each section is $7\frac{1}{8}$ inches wide. Width of legs, $8\frac{1}{8}$ inches.

THIS pattern of Two-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid (excepting 45-inch height), for steam and water, page 83; Direct-Indirect, for steam and water, page 72.

FLORENTINE TWO-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length Inches	Heating Surface					
		45 Inches Height 5 Sq. Feet per Section	38 Inches Height 4 Sq. Feet per Section	32 Inches Height 3 1/3 Sq. Feet per Section	26 Inches Height 2 2/3 Sq. Feet per Section	22 Inches Height 2 1/4 Sq. Feet per Section	18 Inches Height 1 3/4 Sq. Feet per Section
2	5	10	8	6 2/3	5 1/3	4 1/2	3 1/2
3	7 1/2	15	12	10	8	6 3/4	5 1/4
4	10	20	16	13 1/3	10 2/3	9	7
5	12 1/2	25	20	16 2/3	13 1/3	11 1/4	8 3/4
6	15	30	24	20	16	13 1/2	10 1/2
7	17 1/2	35	28	23 1/3	18 2/3	15 3/4	12 1/4
8	20	40	32	26 2/3	21 1/3	18	14
9	22 1/2	45	36	30	24	20 1/4	15 3/4
10	25	50	40	33 1/3	26 2/3	22 1/2	17 1/2
11	27 1/2	55	44	36 2/3	29 1/3	24 3/4	19 1/4
12	30	60	48	40	32	27	21
13	32 1/2	65	52	43 1/3	34 2/3	29 1/4	22 3/4
14	35	70	56	46 2/3	37 1/3	31 1/2	24 1/2
15	37 1/2	75	60	50	40	33 3/4	26 1/4
16	40	80	64	53 1/3	42 2/3	36	28
17	42 1/2	85	68	56 2/3	45 1/3	38 1/4	29 3/4
18	45	90	72	60	48	40 1/2	31 1/2
19	47 1/2	95	76	63 1/3	50 2/3	42 3/4	33 1/4
20	50	100	80	66 2/3	53 1/3	45	35
21	52 1/2	105	84	70	56	47 1/4	36 3/4
22	55	110	88	73 1/3	58 2/3	49 1/2	38 1/2
23	57 1/2	115	92	76 2/3	61 1/3	51 3/4	40 1/4
24	60	120	96	80	64	54	42
25	62 1/2	125	100	83 1/3	66 2/3	56 1/4	43 3/4

Above radiators are tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiator.

See list prices, page 32.

Made at Edwardsville Plant

FLORENTINE THREE-COLUMN RADIATORS

FOR STEAM AND WATER



Each section is $9\frac{1}{8}$ inches wide. Width of legs, $9\frac{5}{16}$ inches.

THIS pattern of Three-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid (excepting 44-inch height), for steam and water, page 83; Direct-Indirect, for steam and water, page 72.

FLORENTINE THREE-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length Height	Heating Surface					
		44 Inches Height 6 Square Feet per Section	38 Inches Height 5 Square Feet per Section	32 Inches Height 4 1/2 Sq. Feet per Section	26 Inches Height 3 3/4 Sq. Feet per Section	22 Inches Height 3 Square Feet per Section	18 Inches Height 2 1/4 Sq. Feet per Section
2	5	12	10	9	7 1/2	6	4 1/2
3	7 1/2	18	15	13 1/2	11 1/4	9	6 3/4
4	10	24	20	18	15	12	9
5	12 1/2	30	25	22 1/2	18 3/4	15	11 1/4
6	15	36	30	27	22 1/2	18	13 1/2
7	17 1/2	42	35	31 1/2	26 1/4	21	15 3/4
8	20	48	40	36	30	24	18
9	22 1/2	54	45	40 1/2	33 3/4	27	20 1/4
10	25	60	50	45	37 1/2	30	22 1/2
11	27 1/2	66	55	49 1/2	41 1/4	33	24 3/4
12	30	72	60	54	45	36	27
13	32 1/2	78	65	58 1/2	48 3/4	39	29 1/4
14	35	84	70	63	52 1/2	42	31 1/2
15	37 1/2	90	75	67 1/2	56 1/4	45	33 3/4
16	40	96	80	72	60	48	36
17	42 1/2	102	85	76 1/2	63 3/4	51	38 1/4
18	45	108	90	81	67 1/2	54	40 1/2
19	47 1/2	114	95	85 1/2	71 1/4	57	42 3/4
20	50	120	100	90	75	60	45
21	52 1/2	126	105	94 1/2	78 3/4	63	47 1/4
22	55	132	110	99	82 1/2	66	49 1/2
23	57 1/2	138	115	103 1/2	86 1/4	69	51 3/4
24	60	144	120	108	90	72	54
25	62 1/2	150	125	112 1/2	93 3/4	75	56 1/4

Above radiators are tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiator.

See list prices, page 32.

Made at Edwardsville Plant

FLORENTINE FOUR-COLUMN RADIATORS

FOR STEAM OR WATER



Each section is $12\frac{1}{2}$ inches wide. Width of legs, $13\frac{1}{2}$ inches.

THIS pattern of Four-Column Radiators is also made in the following special forms only: Side Wall for Concealed Brackets, steam and water, page 82; Legs extra high, solid (excepting 44-inch height), for steam and water, page 83; Direct-Indirect, for steam and water, page 72.

FLORENTINE FOUR-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length Inches	Heating Surface					
		44 Inches Height 10 Square Feet per Section	38 Inches Height 8 1/2 Sq. Feet per Section	32 Inches Height 7 Square Feet per Section	26 Inches Height 5 1/2 Sq. Feet per Section	22 Inches Height 4 1/2 Sq. Feet per Section	18 Inches Height 3 1/2 Sq. Feet per Section
2	5 1/2	20	17	14	11	9	7
3	8 1/4	30	25 1/2	21	16 1/2	13 1/2	10 1/2
4	11	40	34	28	22	18	14
5	13 3/4	50	42 1/2	35	27 1/2	22 1/2	17 1/2
6	16 1/2	60	51	42	33	27	21
7	19 1/4	70	59 1/2	49	38 1/2	31 1/2	24 1/2
8	22	80	68	56	44	36	28
9	24 3/4	90	76 1/2	63	49 1/2	40 1/2	31 1/2
10	27 1/2	100	85	70	55	45	35
11	30 1/4	110	93 1/2	77	60 1/2	49 1/2	38 1/2
12	33	120	102	84	66	54	42
13	35 3/4	130	110 1/2	91	71 1/2	58 1/2	45 1/2
14	38 1/2	140	119	98	77	63	49
15	41 1/4	150	127 1/2	105	82 1/2	67 1/2	52 1/2
16	44	160	136	112	88	72	56
17	46 3/4	170	144 1/2	119	93 1/2	76 1/2	59 1/2
18	49 1/2	180	153	126	99	81	63
19	52 1/4	190	161 1/2	133	104 1/2	85 1/2	66 1/2
20	55	200	170	140	110	90	70
21	57 3/4	210	178 1/2	147	115 1/2	94 1/2	73 1/2
22	60 1/2	220	187	154	121	99	77
23	63 1/4	230	195 1/2	161	126 1/2	103 1/2	80 1/2
24	66	240	204	168	132	108	84
25	68 3/4	250	212 1/2	175	137 1/2	112 1/2	87 1/2

Above radiators are tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiator.

See list price, page 32.

Made at Edwardsville plant

GRECIAN ONE-COLUMN RADIATORS

FOR STEAM AND WATER



Each section is $4\frac{1}{2}$ inches wide. Width of legs, 5 inches.

THIS pattern of One-Column Radiators is also made in the following special forms: Corner, Curved and Circular, for steam and water, pages 81 and 82; Legs extra high, solid, for steam and water, page 83; Side Wall for Concealed Brackets, steam and water, page 82.

GRECIAN ONE-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length Inches	Heating Surface				
		38 Inches Height 3 Square Feet per Section	32 Inches Height 2½ Square Feet per Section	26 Inches Height 2 Square Feet per Section	23 Inches Height 1⅔ Square Feet per Section	20 Inches Height 1½ Square Feet per Section
2	5	6	5	4	3⅓	3
3	7½	9	7½	6	5	4½
4	10	12	10	8	6⅔	6
5	12½	15	12½	10	8⅓	7½
6	15	18	15	12	10	9
7	17½	21	17½	14	11⅔	10½
8	20	24	20	16	13⅓	12
9	22½	27	22½	18	15	13½
10	25	30	25	20	16⅔	15
11	27½	33	27½	22	18⅓	16½
12	30	36	30	24	20	18
13	32½	39	32½	26	21⅔	19½
14	35	42	35	28	23⅓	21
15	37½	45	37½	30	25	22½
16	40	48	40	32	26⅔	24
17	42½	51	42½	34	28⅓	25½
18	45	54	45	36	30	27
19	47½	57	47½	38	31⅔	28½
20	50	60	50	40	33⅓	30
21	52½	63	52½	42	35	31½
22	55	66	55	44	36⅔	33
23	57½	69	57½	46	38⅓	34½
24	60	72	60	48	40	36
25	62½	75	62½	50	41⅔	37½

Above radiators are tapped 1½ inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow ½ inch for each bushing in estimating length of radiators.

See list prices, page 32.

Made at West Newton Plant

GRECIAN TWO-COLUMN RADIATOR

FOR STEAM AND WATER



Each section is $7\frac{3}{4}$ inches wide. Width of legs, $8\frac{1}{4}$ inches.

THIS pattern of Two-Column Radiators is also made in the following special forms only: Corner, Curved and Circular, for steam and water, pages 80 and 81; Legs extra high, solid (excepting 45-inch height), for steam and water, page 83; Side Wall for Concealed Brackets, steam and water, page 82; Direct-Indirect, for steam and water, page 74.

GRECIAN TWO-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length 2 1/2 Inches per Section	Heating Surface					
		45 Inches Height 5 Sq. Feet per Section	38 Inches Height 4 Sq. Feet per Section	32 Inches Height 3 1/2 Sq. Feet per Section	26 Inches Height 2 3/4 Sq. Feet per Section	23 Inches Height 2 1/4 Sq. Feet per Section	20 Inches Height 2 Sq. Feet per Section
2	5	10	8	6 2/3	5 1/3	4 2/3	4
3	7 1/2	15	12	10	8	7	6
4	10	20	16	13 1/3	10 2/3	9 1/3	8
5	12 1/2	25	20	16 2/3	13 1/3	11 2/3	10
6	15	30	24	20	16	14	12
7	17 1/2	35	28	23 1/3	18 2/3	16 1/3	14
8	20	40	32	26 2/3	21 1/3	18 2/3	16
9	22 1/2	45	36	30	24	21	18
10	25	50	40	33 1/3	26 2/3	23 1/3	20
11	27 1/2	55	44	36 2/3	29 1/3	25 2/3	22
12	30	60	48	40	32	28	24
13	32 1/2	65	52	43 1/3	34 2/3	30 1/3	26
14	35	70	56	46 2/3	37 1/3	32 2/3	28
15	37 1/2	75	60	50	40	35	30
16	40	80	64	53 1/3	42 2/3	37 1/3	32
17	42 1/2	85	68	56 2/3	45 1/3	39 2/3	34
18	45	90	72	60	48	42	36
19	47 1/2	95	76	63 1/3	50 2/3	44 1/3	38
20	50	100	80	66 2/3	53 1/3	46 2/3	40
21	52 1/2	105	84	70	56	49	42
22	55	110	88	73 1/3	58 2/3	51 1/3	44
23	57 1/2	115	92	76 2/3	61 1/3	53 2/3	46
24	60	120	96	80	64	56	48
25	62 1/2	125	100	83 1/3	66 2/3	58 1/3	50

Above radiators are tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiators.

See list prices, page 32.

Made at West Newton Plant

GRECIAN THREE-COLUMN RADIATORS

FOR STEAM AND WATER



Each section is 9 inches wide. Width of legs, $9\frac{3}{4}$ inches.

THIS pattern of Three-Column Radiators is also made in the following special forms only: Corner, Curved and Circular, for steam and water, pages 80 and 81; Legs extra high, solid (excepting 45-inch height), for steam and water, page 83; Side Wall for Concealed Brackets, steam and water, page 82; Direct-Indirect, for steam and water, page 74.

GRECIAN THREE-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length 2 1/2 Inches per Section	Heating Surface					
		45 Inches Height 6 Sq. Feet per Section	38 Inches Height 5 Sq. Feet per Section	32 Inches Height 4 1/2 Sq. Feet per Section	26 Inches Height 3 3/4 Sq. Feet per Section	23 Inches Height 3 1/4 Sq. Feet per Section	20 Inches Height 2 3/4 Sq. Feet per Section
2	5	12	10	9	7 1/2	6 1/2	5 1/2
3	7 1/2	18	15	13 1/2	11 1/4	9 3/4	8 1/4
4	10	24	20	18	15	13	11
5	12 1/2	30	25	22 1/2	18 3/4	16 1/4	13 3/4
6	15	36	30	27	22 1/2	19 1/2	16 1/2
7	17 1/2	42	35	31 1/2	26 1/4	22 3/4	19 1/4
8	20	48	40	36	30	26	22
9	22 1/2	54	45	40 1/2	33 3/4	29 1/4	24 3/4
10	25	60	50	45	37 1/2	32 1/2	27 1/2
11	27 1/2	66	55	49 1/2	41 1/4	35 3/4	30 1/4
12	30	72	60	54	45	39	33
13	32 1/2	78	65	58 1/2	48 3/4	42 1/4	35 3/4
14	35	84	70	63	52 1/2	45 1/2	38 1/2
15	37 1/2	90	75	67 1/2	56 1/4	48 3/4	41 1/4
16	40	96	80	72	60	52	44
17	42 1/2	102	85	76 1/2	63 3/4	55 1/4	46 3/4
18	45	108	90	81	67 1/2	58 1/2	49 1/2
19	47 1/2	114	95	85 1/2	71 1/4	61 3/4	52 1/4
20	50	120	100	90	75	65	55
21	52 1/2	126	105	94 1/2	78 3/4	68 1/4	57 3/4
22	55	132	110	99	82 1/2	71 1/2	60 1/2
23	57 1/2	138	115	103 1/2	86 1/4	74 3/4	63 1/4
24	60	144	120	108	90	78	66
25	62 1/2	150	125	112 1/2	93 3/4	81 1/4	68 3/4

Above radiators tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiators.

See list prices, page 32.

Made at West Newton Plant

GRECIAN FOUR-COLUMN RADIATORS

FOR STEAM OR WATER



Each section is 11 inches wide. Width of legs, $11\frac{3}{4}$ inches.

THIS pattern of Four-Column Radiators is also made in the following special forms only: Legs extra high, solid (excepting 45-inch height), for steam and water, page 83; Side Wall for Concealed Brackets, steam and water, page 82.

GRECIAN FOUR-COLUMN RADIATORS

LIST OF SIZES

Number of Sections	*Length 3 Inches per Section	Heating Surface					
		45 Inches Height 10 Sq. Feet per Section	38 Inches Height 8 Sq. Feet per Section	32 Inches Height 6 1/2 Sq. Feet per Section	26 Inches Height 5 Sq. Feet per Section	23 Inches Height 4 1/4 Sq. Feet per Section	20 Inches Height 3 1/2 Sq. Feet per Section
2	6	20	16	13	10	8 1/2	7
3	9	30	24	19 1/2	15	12 3/4	10 1/2
4	12	40	32	26	20	17	14
5	15	50	40	32 1/2	25	21 1/4	17 1/2
6	18	60	48	39	30	25 1/2	21
7	21	70	56	45 1/2	35	29 3/4	24 1/2
8	24	80	64	52	40	34	28
9	27	90	72	58 1/2	45	38 1/4	31 1/2
10	30	100	80	65	50	42 1/2	35
11	33	110	88	71 1/2	55	46 3/4	38 1/2
12	36	120	96	78	60	51	42
13	39	130	104	84 1/2	65	55 1/4	45 1/2
14	42	140	112	91	70	59 1/2	49
15	45	150	120	97 1/2	75	63 3/4	52 1/2
16	48	160	128	104	80	68	56
17	51	170	136	110 1/2	85	72 1/4	59 1/2
18	54	180	144	117	90	76 1/2	63
19	57	190	152	123 1/2	95	80 3/4	66 1/2
20	60	200	160	130	100	85	70
21	63	210	168	136 1/2	105	89 1/4	73 1/2
22	66	220	176	143	110	93 1/2	77
23	69	230	184	149 1/2	115	97 3/4	80 1/2
24	72	240	192	156	120	102	84
25	75	250	200	162 1/2	125	106 1/4	87 1/2

Above radiators are tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiators.

See list prices, page 32.

Made at West Newton Plant

TRITON FLUE RADIATORS

ORNAMENTAL

FOR STEAM OR WATER



Each section is $9\frac{1}{8}$ inches wide. Width of legs, $9\frac{1}{8}$ inches.

THIS pattern of Triton Flue Radiators is also made in the following special form only: Direct-Indirect, for steam or water, page 76

TRITON FLUE RADIATORS

LIST OF SIZES

Number of Sections	*Length Inches	Heating Surface			
		38 Inches Height 7 Square Feet per Section	32 Inches Height 5 1/4 Square Feet per Section	26 Inches Height 4 1/2 Square Feet per Section	20 Inches Height 3 1/4 Square Feet per Section
2	6	14	11 1/2	9	6 1/2
3	9	21	17 1/4	13 1/2	9 3/4
4	12	28	23	18	13
5	15	35	28 3/4	22 1/2	16 1/4
6	18	42	34 1/2	27	19 1/2
7	21	49	40 1/4	31 1/2	22 3/4
8	24	56	46	36	26
9	27	63	51 3/4	40 1/2	29 1/4
10	30	70	57 1/2	45	32 1/2
11	33	77	63 1/4	49 1/2	35 3/4
12	36	84	69	54	39
13	39	91	74 3/4	58 1/2	42 1/4
14	42	98	80 1/2	63	45 1/2
15	45	105	86 1/4	67 1/2	48 3/4
16	48	112	92	72	52
17	51	119	97 3/4	76 1/2	55 1/4
18	54	126	103 1/2	81	58 1/2
19	57	133	109 1/4	85 1/2	61 3/4
20	60	140	115	90	65
21	63	147	120 3/4	94 1/2	68 1/4
22	66	154	126 1/2	99	71 1/2
23	69	161	132 1/4	103 1/2	74 3/4
24	72	168	138	108	78
25	75	175	143 3/4	112 1/2	81 1/4

Above radiators tapped 2 inches and bushed as per list on page 91.

Distance from floor to center of tapping, see page 183.

*Allow 1/2 inch for each bushing in estimating length of radiator.

See list prices, page 32.

Made at Dunkirk Plant

**TRITON PLAIN TWO-COLUMN HOSPITAL
RADIATORS**

FOR STEAM AND WATER



Each section is $7\frac{1}{8}$ inches wide. Width of legs, $7\frac{1}{2}$ inches.
Sections 3 inches on centers. Made in no special forms.

A RADIATOR specially designed for hospitals. The extra large spacings between sections allow easy cleaning.

TRITON PLAIN TWO-COLUMN HOSPITAL RADIATORS

LIST OF SIZES

No. of Sec- tions	*L'gth Inches	Heating Surface					
		45 Inch Height 5 Square Feet per Section	38 Inch Height 4 Square Feet per Section	32 Inch Height 3 1/3 Square Feet per Section	26 Inch Height 2 2/3 Square Feet per Section	22 Inch Height 2 1/4 Sq're Feet per Section	20 Inch Height 2 Square Feet per Section
2	6	10	8	6 2/3	5 1/3	4 1/2	4
3	9	15	12	10	8	6 3/4	6
4	12	20	16	13 1/3	10 2/3	9	8
5	15	25	20	16 2/3	13 1/3	11 1/4	10
6	18	30	24	20	16	13 1/2	12
7	21	35	28	23 1/3	18 2/3	15 3/4	14
8	24	40	32	26 2/3	21 1/3	18	16
9	27	45	36	30	24	20 1/4	18
10	30	50	40	33 1/3	26 2/3	22 1/2	20
11	33	55	44	36 2/3	29 1/3	24 3/4	22
12	36	60	48	40	32	27	24
13	39	65	52	43 1/3	34 2/3	29 1/4	26
14	42	70	56	46 2/3	37 1/3	31 1/2	28
15	45	75	60	50	40	33 3/4	30
16	48	80	64	53 1/3	42 2/3	36	32
17	51	85	68	56 2/3	45 1/3	38 1/4	34
18	54	90	72	60	48	40 1/2	36
19	57	95	76	63 1/3	50 2/3	42 3/4	38
20	60	100	80	66 2/3	53 1/3	45	40
21	63	105	84	70	56	47 1/4	42
22	66	110	88	73 1/3	58 2/3	49 1/2	44
23	69	115	92	76 2/3	61 1/3	51 3/4	46
24	72	120	96	80	64	54	48
25	75	125	100	83 1/3	66 2/3	56 1/4	50

Above radiators tapped two inches and bushed as per list on page 91.

Distance from floor to center of tapping, page 183.

*Allow 1/2 inch for each bushing in estimating length of radiator.

See list prices, page 32.

Made at Dunkirk and Edwardsville Plants

FLORENTINE AND TRITON PLAIN DIRECT-INDIRECT RADIATORS

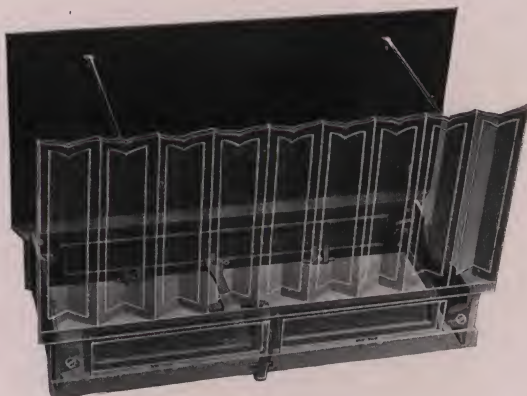
FOR STEAM AND WATER



Florentine Radiator with box base applied

CAPITOL Box Bases made for use on Two, Three and Four-Column Florentine and Two and Three-Column Triton plain design Radiators.

DIRECT-INDIRECT BOX BASE FOR FLORENTINE AND TRITON PLAIN RADIATORS



THE damper arrangements operates both front and back dampers with one lever, adjusting to atmospheric conditions by controlling the intake of cold air as desired.

Above Box Bases are manufactured for use on Two, Three and Four-Column Florentine and Two and Three-Column Triton Plain design Radiators. Bottom of back air inlet one-half inch above the floor.

MEASUREMENTS OF BOX BASES

OUTSIDE MEASUREMENTS OF FLANGE FOR ATTACHING PIPE CONNECTION

No.	Description	Flange Inches
7	For seven-section radiator	$2\frac{3}{8} \times 10\frac{1}{4}$
8	For eight-section radiator	$2\frac{3}{8} \times 12\frac{3}{4}$
9	For nine-section radiator	$2\frac{3}{8} \times 15\frac{1}{4}$
10	For ten-section radiator	$2\frac{3}{8} \times 17\frac{3}{4}$
11	For eleven-section radiator	$2\frac{3}{8} \times 20\frac{1}{4}$
12	For twelve-section radiator	$2\frac{3}{8} \times 22\frac{3}{4}$

Above measurements are for Two and Three-Column Radiators. Measurements for Four-Column on application.

All orders for Box Base Radiators should clearly state whether back or bottom air inlet is required. Back opening will be furnished unless otherwise ordered.

An eleven-section Base is used on eleven or more odd number of sections, and a twelve-section base is used on twelve or more even number of sections.

For wall box, see page 78.

GRECIAN DIRECT-INDIRECT RADIATORS

FOR STEAM AND WATER

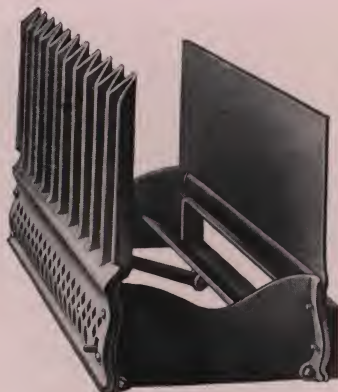


Grecian Radiator with box base applied

GRECIAN Box Bases are made for use on Grecian Two-, Three- and Four-Column Radiators.

DIRECT-INDIRECT BOX BASE

FOR GRECIAN RADIATORS



OUTSIDE DIMENSIONS OF BACK OPENING FLANGE

Number of Sections	Size, Inches	Number of Sections	Size, Inches
5	$3\frac{1}{4}$ x $8\frac{1}{2}$	9	$3\frac{1}{4}$ x $16\frac{1}{2}$
6	$3\frac{1}{4}$ x $8\frac{1}{2}$	10	$3\frac{1}{4}$ x $17\frac{1}{2}$
7	$3\frac{1}{4}$ x $12\frac{1}{2}$	11	$3\frac{1}{4}$ x $17\frac{1}{2}$
8	$3\frac{1}{4}$ x $12\frac{1}{2}$	12 to 17	$3\frac{1}{4}$ x $21\frac{3}{4}$

Bottom of each back air inlet opening is 1 inch above floor.

An eleven-section Base is used on eleven or more odd numbers of sections and a twelve-section Base is used on twelve or more even numbers of sections.

Box Bases with back or bottom air inlet can be furnished, but unless otherwise ordered, Base with back air inlet will be shipped. If bottom air inlet is required state whether floor dampers are wanted.

For Wall Box, see page 78.

TRITON FLUE RADIATORS**DIRECT-INDIRECT****FOR STEAM AND WATER**

Made in no special forms.

TRITON FLUE BOX BASE



Bottom of back air inlet is 1 inch above floor.
For application to radiator, see page 76.

MEASUREMENTS OF TRITON BOX BASES

Outside of Back Opening Flange

Number of Sections	For Triton Flue Radiator Inches	Number of Sections	For Triton Flue Radiator Inches
4	$2\frac{3}{4} \times 3\frac{1}{2}$	9	$2\frac{3}{4} \times 18\frac{1}{2}$
5	$2\frac{3}{4} \times 6\frac{1}{2}$	10	$2\frac{3}{4} \times 21\frac{1}{2}$
6	$2\frac{3}{4} \times 9\frac{1}{2}$	11	$2\frac{3}{4} \times 24\frac{1}{2}$
7	$2\frac{3}{4} \times 12\frac{1}{2}$	12	$2\frac{3}{4} \times 27\frac{1}{2}$
8	$2\frac{3}{4} \times 15\frac{5}{8}$		

An eleven-section Base is used on eleven or more odd numbers of sections and a twelve-section Base is used on twelve or more even numbers of sections.

The damper arrangement of this is such that when cold air is brought through the floor, separate floor dampers are not required. Make floor opening same size as for wall opening.

For measurements, see above table.

WALL BOXES



THE main part of Box is constructed in one piece, which with angle slats in place, makes it water-tight and durable. A heavy copper screen is firmly held in position at back of box, making it insect-proof.



CROSS SECTION

From front flange to back of box, $2\frac{1}{2}$ inches; size of opening in brickwork, $17\frac{1}{4} \times 5\frac{1}{8}$ inches; size of collar for galvanized iron, $17 \times 4\frac{7}{8}$ inches.

DINING-ROOM RADIATORS

FOR STEAM AND WATER



Number	Length in Inches	Heating Surface Square Feet	Price for Water	Price for Steam
1	30	37½	\$50.00	\$46.00
2	35	47½	55.00	50.00
3	40	57½	60.00	54.00
4	45	67½	65.00	58.00
5	50	77½	70.00	62.00
6	55	87½	75.00	66.00
7	60	97½	80.00	70.00
8	65	107½	85.00	74.00
9	70	117½	90.00	78.00
10	75	127½	95.00	82.00

Made in Three-Column pattern only. See page 65. Ovens are all the same size, 24 x 11 x 16 inches. Height of radiator complete, 38½ inches. Distance from back of oven to center of radiator tappings, 5¾ inches.

CORNER RADIATORS

FOR STEAM AND WATER



FOUR sections are needed to turn a corner, and as many regular sections may be added as desired.

Made in regular heights of Grecian Radiators.

Space occupied by the four-corner sections each way from the corner of the room:

10½ inches for One-Column Radiators.

12 inches for Two-Column Radiators.

12½ inches for Three-Column Radiators

In ordering Corner Radiators, always state which is the feed end as you face the radiator when in position, as illustrated above.

CIRCULAR RADIATORS

FOR STEAM AND WATER



DIMENSIONS

One-Column			Two-Column			Three-Column		
Number of Sections	Inside Diam. at Legs	Outside Diam. at Legs	Number of Sections	Inside Diam. at Legs	Outside Diam. at Legs	Number of Sections	Inside Diam. at Legs	Outside Diam. at Legs
16	$8\frac{1}{16}$	$18\frac{1}{16}$	16	$6\frac{1}{2}$	$23\frac{1}{2}$	16	$4\frac{1}{2}$	25
18	$9\frac{3}{8}$	$19\frac{5}{8}$	18	$8\frac{1}{2}$	$25\frac{1}{2}$	18	$6\frac{1}{2}$	27
20	$10\frac{1}{16}$	$20\frac{1}{16}$	20	$10\frac{1}{4}$	$27\frac{1}{4}$	20	$8\frac{1}{4}$	$28\frac{3}{4}$
22	$12\frac{1}{16}$	$22\frac{1}{16}$	22	$12\frac{1}{4}$	$29\frac{1}{4}$	22	$10\frac{1}{4}$	$30\frac{3}{4}$
24	$13\frac{7}{16}$	$23\frac{11}{16}$	24	$14\frac{1}{2}$	31	24	$11\frac{1}{2}$	$32\frac{1}{2}$
26	$14\frac{3}{4}$	25	26	$15\frac{1}{2}$	$32\frac{1}{2}$	26	$12\frac{3}{4}$	$33\frac{1}{4}$
28	$16\frac{1}{8}$	$26\frac{3}{8}$	28	17	34	28	$14\frac{1}{2}$	35
30	$17\frac{7}{16}$	$27\frac{11}{16}$	30	$18\frac{1}{2}$	$35\frac{1}{2}$	30	$16\frac{1}{4}$	$36\frac{3}{4}$
32	$18\frac{1}{16}$	$29\frac{1}{16}$	32	20	37	32	18	$38\frac{1}{2}$
34	$20\frac{3}{16}$	$30\frac{7}{16}$	34	$21\frac{1}{2}$	$38\frac{1}{2}$	34	$19\frac{3}{4}$	$40\frac{1}{4}$
36	$21\frac{1}{2}$	$31\frac{3}{4}$	36	$22\frac{1}{4}$	$39\frac{1}{4}$	36	$21\frac{1}{2}$	42
38	$22\frac{1}{16}$	$33\frac{1}{8}$	38	25	42	38	$23\frac{1}{4}$	$43\frac{3}{4}$

Circular Radiators are made in two pieces and each half has one tapping for single pipe work or two tapings for two pipe work.
Marble Top can also be furnished if desired.

On Special Order Circular Radiators for two pipe steam or water when not to go around column can be furnished in one piece.

COLUMN WALL RADIATORS

With Concealed Brackets

FOR STEAM AND WATER



ABOVE illustration is representative of the Side Wall pattern of Florentine, Triton Plain and Puritan One, Two, Three and Four-Column; Triton, Ornamental One, Two and Three-Column, and Grecian One, Two, Three and Four-Column Radiators.

List of sizes, heights, tappings, etc., same as the several styles referred to above.

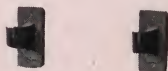
CONCEALED RADIATOR BRACKETS FOR TRITON ORNAMENTAL RADIATORS



Made to support One, Two and Three-Column Triton Ornamental Radiators.

FOR TRITON PLAIN, AND FLORENTINE RADIATORS

Made to support One, Two, Three and Four-Column Triton Plain, and Florentine Radiators.



FOR GRECIAN RADIATORS

Made to support One, Two, Three and Four-Column Grecian Radiators.



HIGH LEGS

On Special Order only, all styles of our Radiators (except 44 and 45-inch heights) can be furnished with extra high solid legs, for which an extra charge will be made.

ATHENIAN PANTRY RADIATOR

FOR STEAM AND WATER



THIS pattern of radiator is useful for pantries, restaurants, dining-rooms and any place where heat is required, and the additional service of plate warming needed. It is made up from seven-foot size only, of Athenian wall sections.

The radiator may be constructed from one to five sections high as follows:

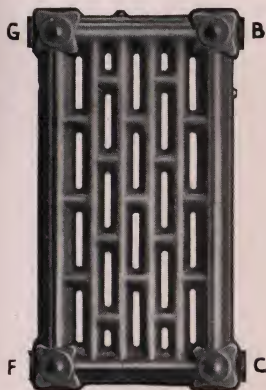
Number	Height Inches	Heating Surface Feet	List Price
1	7	7	\$ 8.00
2	17	15	15.00
3	27	23	22.00
4	37	31	29.00
5	47	39	36.00

Length, $24\frac{1}{4}$ inches. Width, $13\frac{1}{4}$ inches.

Tapping, see page 91.

ATHENIAN WALL RADIATORS

FOR STEAM AND WATER



THIS style of radiator is well adapted to heat small rooms, narrow halls, bath rooms, churches, gymnasiums, car barns, factories, steamships, etc., where floor space is limited. They are built up in various ways so that they may be used horizontally, vertically or in flat form for hanging on ceilings, etc.



SIZES AND MEASUREMENTS

Made in Three Sizes

Sizes	Number of Square Feet in Each Section	Width of Each Section	Length of Each Section	Thickness of Each Section	Extends from Wall with Brackets
Extra large . . .	9	13 $\frac{1}{4}$	29 $\frac{1}{4}$	3	3 $\frac{3}{4}$
Standard . . .	7	13 $\frac{1}{4}$	24 $\frac{1}{4}$	3	3 $\frac{3}{4}$
Small . . .	5	13 $\frac{1}{4}$	19 $\frac{1}{4}$	3	3 $\frac{3}{4}$

Methods of assembling are shown on pages 184 to 188.
See list prices, page 32.

ATHENIAN WALL RADIATORS**ASSEMBLING**

SECTIONS are connected with 1½-inch right and left hand inside nipples, which have two lugs cast on inside. With a bar flattened at one end inserted between these lugs the sections can be easily removed. A bar of 1x¾-inch iron will answer, or the special wrench on page 90.

TAPPINGS

Athenian Wall Radiators are tapped 1½ inches with one end right hand and the other left hand, but are bushed per list on page 91. The inside threads of all bushings are right hand unless otherwise ordered.

If tapping is not shown on illustration as wanted, it should be indicated on a special sketch.

When more than four tappings are required in one section an extra charge is made for the extra tappings, at 10 cents each, net.

DIRECTIONS FOR ORDERING AND SHIPPING

When so ordered, Wall Radiator Sections can be shipped separately with nipples for assembling, but unless otherwise specified they will be shipped as follows:

Three sections assembled when like figure 2 or 17; four sections assembled when like figure 6.

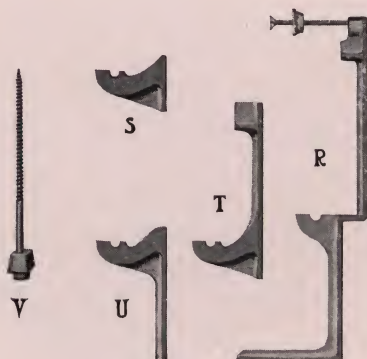
When so specified more sections can be assembled for shipping, for which a net charge of 10 cents for each additional section is made.

A right and left hand threaded nipple having a center hexagon nut is provided to connect the assembled parts on the job. For steam, such parts should be connected at the bottom only, and the upper opening should be plugged.

Both horizontal and vertical tapped sections are carried in stock, but they are not interchangeable, hence to avoid mistakes it is necessary to clearly state which is wanted.

If possible designate style of setting wanted by referring to one of the figure numbers on pages 184 to 188, otherwise make a sketch showing whether the sections are to be set horizontally or vertically, and state how tappings are wanted.

ATHENIAN WALL RADIATOR BRACKETS



Brackets R fit over the baseboard and are made in the three following sizes:

Description	Inches
R No. 1, for 10½-inch base, height from floor to center lower tapping	11½
R No. 2, for 8½-inch base, height from floor to center lower tapping	9½
R No. 3, for 6½-inch base, height from floor to center lower tapping	7½

Brackets S and T are to be used in pairs—the S at top and T at bottom.

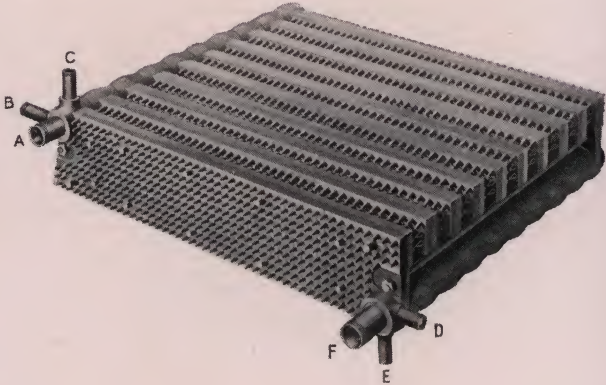
Bracket U to be used in place of T where the bottom of radiator extends to baseboard or wainscoting

Bracket V having a lag screw 9 inches long for hanging ceiling radiators can be furnished.

When ordering wall radiators be sure to mention which brackets are wanted. Brackets are not included in the price of radiators and will be charged extra.

PIN INDIRECT RADIATORS

FOR STEAM AND WATER



MEASUREMENTS

10 SQUARE FEET PER SECTION

Length of Section Inches	Depth of Section Inches	Depth Over All Inches	Center to Center Push Nipple Inches	Center to Center Screw Nipple *Inches
$36\frac{1}{4}$	$7\frac{3}{4}$	$8\frac{5}{8}$	$3\frac{1}{8}$	$4\frac{1}{8}$

15 SQUARE FEET PER SECTION

Length of Section Inches	Depth of Section Inches	Depth Over All Inches	Center to Center Push Nipple Inches	Center to Center Screw Nipple *Inches
$36\frac{5}{8}$	$10\frac{5}{8}$	$11\frac{5}{8}$	$3\frac{1}{4}$	$4\frac{1}{4}$

*For free area between sections, see page 178.

PIN INDIRECT RADIATORS

FOR STEAM AND WATER



MEASUREMENTS

20 SQUARE FEET PER SECTION

Length of Section Inches	Depth of Section Inches	Depth Over All Inches	Center to Center of Section, Push Nipple, Inches	Center to Center of Section, Screw *Nipple, Inches
36	14	14¾	3¾	4¾

*For free area between sections, see page 178.

INDIRECT RADIATORS

TAPPINGS on Indirect Radiators can be made at A, B, C, D, E, or F, but unless otherwise ordered they will be tapped at A and F, as follows:

Pin 10-foot section, 1½ inches; Pin 15 and 20-foot, and Champion 10-foot sections, 2 inches; bushed as desired.

All Pin Indirect sections are regularly connected with extra heavy malleable iron push nipples but on special order extra heavy right and left hand screw nipples having hexagon nut at center can be furnished.

Radiator sections are assembled at factory and shipped complete, unless specially ordered otherwise. By assembling at factory the radiators can be thoroughly tested to prevent leaky joints and at the same time save much of Fitter's time in setting.

When specially ordered, sections are shipped unassembled with bolts and nipples for putting together, but when so ordering always specify the number of stacks and number of sections in each stack, that the proper bolts may be sent.

When ordered with screw nipples, distance center to center can be increased ¼ inch or ½ inch if desired.

An additional net charge of one cent per square foot is made for assembling at factory.

ADJUSTABLE FEET

CONSIST of two iron blocks that open by turning the top piece which is so cast that any radiator foot will fit securely. Adjustment can be made with the screw, which holds the two pieces in place. They can be used on any kind of fixture that must stand level. Furnished in plain iron and can be bronzed to correspond to fixture upon them.



No. 1 extends	$\frac{7}{8}$ to $1\frac{1}{4}$ inches,	price each	. . . .	\$0.20
No. 2 extends	$1\frac{1}{4}$ to $1\frac{3}{4}$ inches,	price each	. . . .	.25
No. 3 extends	$1\frac{3}{8}$ to $2\frac{1}{4}$ inches,	price each	. . . .	.30

PEDESTALS

SOLID cast-iron pedestals can be furnished for placing under legs of all styles of our radiators and are made in the following heights:

$\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4 and $4\frac{1}{2}$ inches

CAPITOL RADIATOR WRENCHES

MADE to fit all United States Radiator screw nipples, which have two lugs on inside so that flattened end of wrench can be applied and the nipple unscrewed or tightened. Price each, \$2.50.

RADIATOR TAPPING LIST

STEAM

ONE-PIPE WORK

Radiators containing 24 square feet and under . . .	1 inch
Above 24, but not exceeding 60 square feet . . .	1¼ inch
Above 60, but not exceeding 100 square feet . . .	1½ inch
Above 100 square feet	2 inch

TWO-PIPE WORK

Radiators containing 48 square feet and under. . .	1 x ¾ inch
Above 48, but not exceeding 96 square feet . . .	1¼ x 1 inch
Above 96 square feet	1½ x 1¼ inch

WATER

TAPPED FOR SUPPLY AND RETURN

Radiators containing 40 square feet and under. . .	1 inch
Above 40, but not exceeding 72 square feet . . .	1¼ inch
Above 72 square feet	1½ inch

All Direct Radiators are regularly made with air valve tapings ⅛ inch. When radiators are ordered for vapor or vacuum heating, specific instructions should be given as to method of tapping.

Water radiators are regularly shipped with blank at top of leg sections, but can be tapped 1½ inches or smaller on special order.

Unless otherwise ordered, all openings of Direct Radiators will have right-hand threads (except that of Wall Radiators where tapped 1½ inches, in which case tapping at one end is right-hand and left-hand on opposite end).

All Radiators listed herein (except Triton Flue and Athenian Wall Radiators) are constructed with extra heavy malleable iron push nipples.

*CAPITOL
CLEANERS*Blower
Type

Plant No.	Motor H. P.	Current DC or AC 60 Cycle	Mercury Vacuum at Tank	Cubic ft. Air per Minute	Tools	Hose 1½ Inch	Inlet Valves	Price
101	½	110-220	3½"	50	101-2	30'	3	\$200
102	¾	110-220	4 "	50	101-2	30'	3	225
103	1	110-220	5 "	55	103-4	50'	4	300
104	1½	110-220	6 "	55	103-4	50'	4	325

If alternating current motors are desired for frequencies other than 60 cycles, they will be furnished at an additional net cost as follows:

H. P.	Cycles					
	25	30	40	50	100	133
½	\$ 9.50	\$ 9.50	\$ 2.50	\$ 2.50	\$ 5.00	\$ 5.00
¾	12.00	12.00	6.00	2.50	8.00	8.00
1	18.00	18.00	12.50	5.00	21.50	21.50
1½	18.50	18.50	10.50	5.00	20.00	20.50

CAPITOL CLEANERS

Blower
Type



THE following gives pipe sizes and distance from machine to furthest inlet, with number of feet of hose that can be used with each machine, and amount of vacuum obtained at the tool under these conditions.

Plant	Riser	Lateral	Exhaust	No. Ft. Pipe	Hose	Mercury Vacuum at Tool	K. W. Input	Weight Crated
101	2"	2"	2"	60	30'	2½"	.6	475
102	2"	2"	2"	150	30'	2½"	.85	500
103	2"	2"	2"	275	50'	3"	1.	600
104	2"	2"	2"	350	50'	3"	1.2	625

Floor Space, 20 x 44 inches.

Pipe ends should be carefully butt-ended and reamed, long sweep fittings used, and clean-out plugs inserted at all exposed turns. In making basement drops for inlet valves, use 1½-inch pipe.

*CAPITOL
CLEANERS*Turbine
Type

Plant	Motor H. P.	Current D.C.-A.C. 60 Cycle	Water Vacuum At Tank	Cubic ft. Air per Minute	Tools	Hose 1½"	Inlet Valves	Price
1	½	110-220	18-19"	50	101-2	30'	3	175.00
2	1	110-220	25-27"	55	101-2	30'	3	260.00
3	1½	110-220	33-35"	55	103-4	50'	4	320.00

NOTE—13.6-inch Water Vacuum is equivalent to 1-inch Mercury Vacuum.

CAPITOL CLEANERS

Turbine
Type



THE following gives pipe sizes and distance from machine to furthest inlet, with number of feet of hose that can be used with each machine, and amount of vacuum obtained at the tool under these conditions.

Plant	Riser	Lateral	Exhaust	Pipe	Hose	Water Vacuum At Tool	Kilowatt Input.	Weight
1	2"	2"	2½"	25'	30'	10"	.55	260
2	2"	2"	2½"	75'	30'	10"	.9	300
3	2"	2½"	2½"	50' 2" 75' 2½"	50'	13.6"	1.3	350

Floor Space, diameter, 20 inches

Pipe ends should be carefully butt-ended and reamed, long sweep fittings used, and clean-out plugs inserted at all exposed turns. In making basement drops for inlet valves use 1½-inch pipe.



THE following prices apply on tools and parts ordered separately and are subject to change without notice:

1—Carpet Renovator, 8-inch ...	\$3.00	10—Inlet Valves: 1½-inch Male or Female Thread—	
Carpet Renovator, 10-inch..	3.25	Flush Lock Type (Brass) ...	\$1.50
2—Bare Floor Tool, 12-inch ...	5.50	Flush Lock Type (Nickle) ..	1.60
Bare Floor Tool, 14-inch ...	5.50	11—Hose: 1½-inch Inside Diam- eter, Wire Ribbed, Canvas Covered—	
3—Upholstery Tool	1.75	15-foot section	9.00
4—Hand Brush	3.50	25-foot section	15.00
5—Wall Brush, 12-inch	6.00	50-foot section	30.00
6—Floor Rod with swivel.....	6.50		
7—Wall Rod	5.25		
8—Hose Coupling	1.00		
9—Valve Connector	1.00		

CAPITOL CLEANERS

EQUIPMENT 101 AND 102

Carpet Renovator, 8 inch; Bare Floor Tool, 12 inch; Upholstery Tool; Hand Brush; Floor Rod with Swivel; Valve Connector.
30 feet of 1½ inch hose.

EQUIPMENT 103 AND 104

Carpet Renovator, 10 inch; Bare Floor Tool, 14 inch; Upholstery Tool; Hand Brush; Wall Brush; Wall Rod; Floor Rod with Swivel; Hose Coupling; Valve Connector.
50 feet of 1½ inch hose.

CAPITOL PORTABLE UNITS

101-T— ½ H. P.	Price \$225.00
102-T— ¾ H. P.	Price 250.00
103-T—1 H. P.	Price 325.00
104-T—1½ H. P.	Price 350.00

Equipment furnished with each consists of 25 feet of 1½-inch hose and set of tools as shown under equipment 101-102.

WITHOUT MOTOR

Plants 101-102—Equipment and capacity same as shown on Page 92. Price \$160.00

Plants 103-104—Equipment and capacity same as shown on Page 92. Price \$250.00

INSTRUCTIONS FOR ORDERING VACUUM CLEANERS

Order Capitol Cleaners by number.

State whether current desired is Direct or Alternating.

If Direct Current, give voltage.

If Alternating Current, give voltage, phase and cycles.

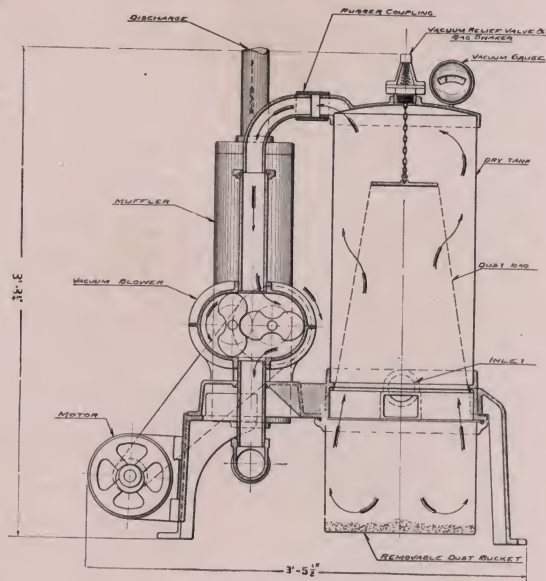
In ordering Inlet Valves specify finish and whether male or female thread.

Capitol Cleaners sold f. o. b. cars Factory.

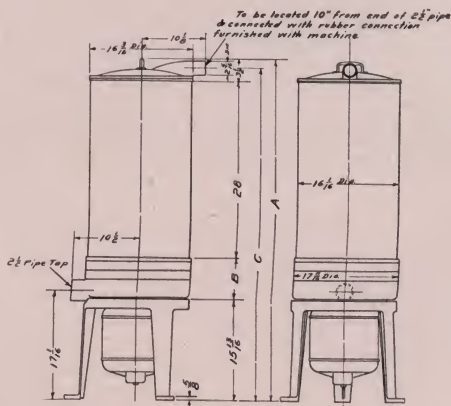
Plants 101-2-3-4 are manufactured at Connersville, Ind.

Plants 1-2-3 are manufactured at Pittsburgh, Pa.

CAPITOL CLEANERS

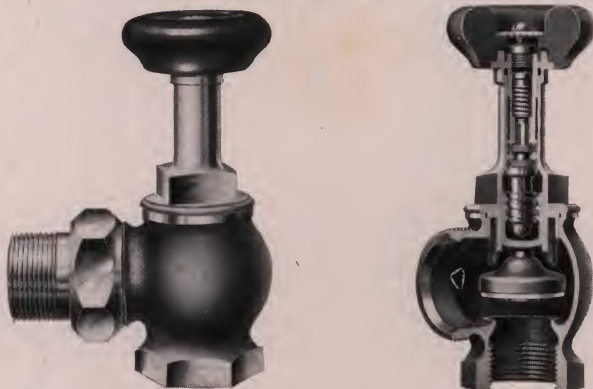


Capitol Cleaner 101-2.



Capitol Cleaner 1.

TRITON PACKLESS RADIATOR VALVES FOR STEAM



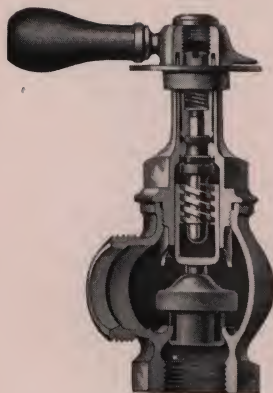
THE Triton Packless Radiator Valve has a number of decided advantages over any other article of its class. Its packless and quick opening features are simple and efficient and the interior arrangement cannot be injured by ordinary abuse. The bonnet is carried up to the under side of the follower plate to protect the working parts from any outside interference.

By referring to the sectional view, it will be seen that the stem is of the non-rising type and is provided with a flange a short distance above the triple thread. Between this flange and the inwardly extending flange of the bonnet is a specially prepared composition washer. Another similar washer is placed immediately above the inwardly extending flange of the bonnet, and upon this second composition washer rests a gland shaped follower plate extending from the handle. A shoulder is formed on the inside of this follower plate and this shoulder supports a spring which bears upward against a nut screwed to the top of the stem. A double service is performed by this spring, as it bears downward on the upper composition washer and at the same time pulls upward against the lower composition washer, thus holding both of them tightly against the inwardly extending flange of the bonnet and taking up automatically any wear that may occur in either. This insures an absolutely tight joint against water, steam or air. It has the genuine quick opening feature, as it can be fully opened or fully closed and locked closed by about a three-quarters turn of the handle.

WITH UNION, COMP. DISC, ROUGH BODY, PLATED ALL OVER

No.	Size, inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
512	Angle	\$3.15	\$3.80	\$4.75	\$6.40	\$8.10	\$13.10

On special order can also be furnished with lever handle or lock and shield. Plated keys list, 50 cents each extra.
See page 182 for roughing-in measurements.



TRITON GRADUATED PACKLESS RADIATOR VALVES

THE Triton Graduated Packless Valve is similar in construction to the regular packless valve shown on page 99, except that it has a lever handle, an indicator plate graduated into eight sections and means for a special adjustment by which each valve can be accurately set for a wide range of sizes of radiators.

With each valve we furnish four different shells, any one of which may be attached to the disc holder below the disc. If the valve is to be connected to a very small radiator, the shell with the single slot should be used, while if the radiator is of medium or large size, shells with two, three or four slots should be employed. It will remain partly open at any desired position without any danger of variation of the openings unless the handle is moved.

WITH UNION, COMP. DISC, ROUGH BODY,
PLATED ALL OVER

*No.	Size, inches	½	¾	1	1¼	1½
522	Angle Valve, complete with Shells (per cut)	\$4.00	\$4.80	\$5.85	\$7.65	\$9.50
523	Angle Valve, without Shells	3.75	4.50	5.50	7.25	9.00
622	Corner Valve, R. or L., complete with Shells	4.30	5.20	6.35	8.30	10.35
623	Corner Valve, R. or L., without Shells	4.05	4.90	6.00	7.90	9.85

On special order can be furnished with lock and shield. Plated keys, list 50 cents each extra. Unless otherwise specified valves with shells will be shipped.

TRITON VACUUM THERMO RADIATOR VALVES

THIS is a very sensitive and efficient return valve. It has a marked advantage over all other valves of its class; on account of its construction, the expansion member cannot become overheated. By reference to the sectional view it will be seen that the steam and water enter from below, and when the carbon post becomes sufficiently heated it closes the inlet and prevents any further heat from striking it, and at the same time permits the water of condensation to pass freely when open. It is automatic in its action and can be adjusted to operate at any desired degree of heat. In each case it responds almost instantly to a difference of a few degrees of temperature.

No. 10 Angle, is adapted to take care of 150 feet of radiation; list, \$6.00.

No. 12 Angle, is adapted to take care of 250 feet of radiation; list, \$8.00.

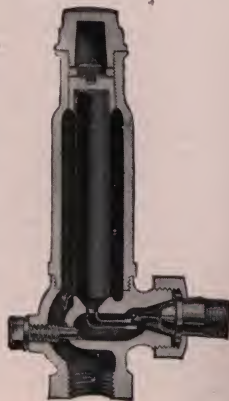
No. 14 Angle, is adapted to take care of 400 feet of radiation; list, \$10.00.

Tappings ½ inch for all sizes.

These valves can also be furnished in either corner or straightway pattern at an addition of \$1.00 to the list price of the angle type.

With Union, Plated All Over.

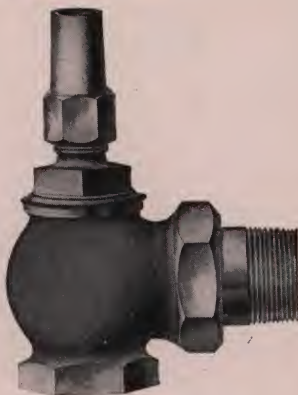
*See page 182 for roughing-in measurements.



STEAM RADIATOR VALVES



Nos. 112 and 412



Lock and Shield No. 312

WITH UNION, COMP. DISC—ANGLE

No.	Size, inches . . .	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
112	Rough body, plated all over	\$3.15	\$3.80	\$4.75	\$6.40	\$8.10	\$13.10

WITH UNION, COMP. DISC—ANGLE. Lock and Shield

No.	Size, inches . . .	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
312	Rough body, plated all over	\$3.15	\$3.80	\$4.75	\$6.40	\$8.10	\$13.10

Plated keys, list, 50 cents each extra.

WITH UNION *BRASS DISC—ANGLE

No.	Size, inches . . .	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
412	Rough body, plated all over	\$2.40	\$2.85	\$3.65	\$5.05	\$7.10	\$10.85

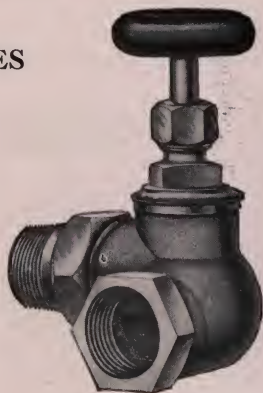
*When required for hot water heating, a hole for circulation will be drilled through the brass disc. Specify clearly when wanted for water.
For convenience when ordering, use numbers and sizes only.
See page 182 for roughing-in measurements.

CORNER RADIATOR VALVES

FOR STEAM

THESE corner valves, with a large area in the body, show a great improvement over the old style.

All steam metal, Comp. Disc, with Union.



No. 212L

No.	Rough Body, Plated All Over	Size, Inches					
		$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
*212R	Right hand . . .	\$3.45	\$4.20	\$5.25	\$7.05	\$8.95	\$14.45
*212L	Left hand . . .	3.45	4.20	5.25	7.05	8.95	14.45



No. 612L

**TRITON PACKLESS
CORNER RADIATOR
VALVES**

FOR STEAM

THESE valves are of the same construction as the Packless Valves shown on page 99. Comp. Disc with Union.

No.	Rough Body Plated All Over	Size, Inches					
		$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
*612R	Right hand . . .	\$3.45	\$4.20	\$5.25	\$7.05	\$8.95	\$14.45
*612L	Left hand . . .	3.45	4.20	5.25	7.05	8.95	14.45

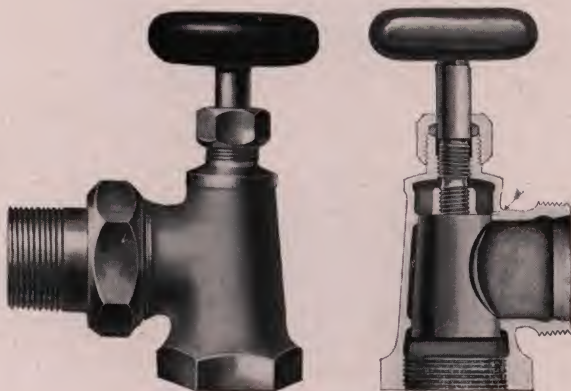
*On special order, can also be furnished with lock and shield. Plated keys, list 50 cents each extra.

Triton Packless Corner Valves are made in the graduated pattern with lever handle or lock and shield. See page 100 for list.

For convenience when ordering use numbers and sizes only.

See page 182 for roughing-in measurements.

BELL-SHAPED WATER RADIATOR VALVES



QUICK OPENING—BONNETLESS

THE Bell-Shaped Hot Water Valve is equipped with a cone-shaped disc which is opened or closed by one-half turn of the handle. The stem is squared at its lower end and to this squared portion is fitted a driving arm which actuates the disc. A right-hand thread is cut on the lower part of the stem and a little higher a left-hand thread is cut. This left-hand thread engages with the upper part of the body while the right-hand thread engages with the upper part of the disc cone.

When the stem is turned to the right, the disc is revolved and at the same time drawn upward, thus closing the valve with a very tight joint. When the stem is turned to the left, the first portion of the movement releases the disc by forcing it downward.

When the motion of the stem is reversed, the driving arm moves one-eighth turn before it engages with the lug on the shell; consequently in all cases the shell is loosened or released by being forced upward or downward before the driving arm bears on the lug to revolve it. More metal is placed in those parts subjected to the greatest strain in service than is possible in ordinary valves of the same weight, and as this valve is somewhat heavier than ordinary makes, it follows that it must be considerably stronger. No spring is used and the stem is extra strong, being made from brass rod $\frac{9}{16}$ inch in diameter.

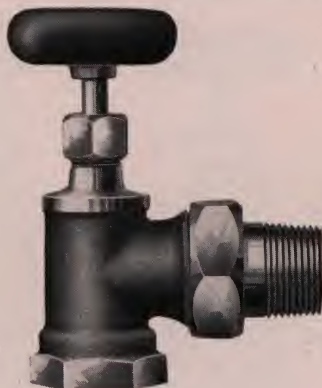
WITH UNION—ROUGH BODY, PLATED ALL OVER

Size, inches . .	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
No. 52 . .	\$2.40	\$2.85	\$3.65	\$5.05	\$7.10	\$10.85

For convenience when ordering, use numbers and sizes only.

On special order can be furnished with lock and shield.

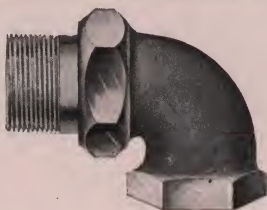
See page 182 for roughing-in measurements.

WATER RADIATOR VALVES

QUICK OPENING — BONNETLESS
WITH UNION, ROUGH BODY, PLATED ALL OVER

No.	Size, inches . . .	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
202		\$2.40	\$2.85	\$3.65	\$5.05	\$7.10	\$10.85

On special order can be furnished with lock and shield.

RADIATOR ELBOWS

WITH UNION, ROUGH BODY, PLATED ALL OVER

No.	Size, inches . . .	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
42		\$1.75	\$2.00	\$2.50	\$3.20	\$4.00	\$7.00

For convenience when ordering, use numbers and sizes only.
See page 182 for roughing-in measurements.

UNIQUE WATER RADIATOR VALVES



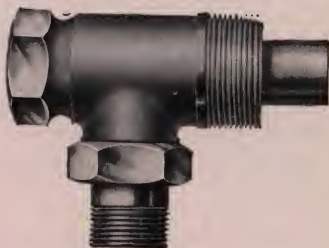
THE use of the Unique Valve does away with the connection at both ends of a water radiator. Its many advantages are apparent, not only for convenience, but in saving fitter's labor and pipe and fittings. Opens and closes with one-sixth turn of the handle.

Size Inches	Center to Center of Elbows Inches	Center of Body to End of Spud Inches	Center of Spud to Bottom of Elbows Inches	Tapping of Radiator when Valve is Used Inches	Price
$\frac{1}{2}$	$5\frac{1}{2}$	$2\frac{7}{8}$	$1\frac{7}{8}$	$1\frac{1}{4}$	\$4.25
$\frac{3}{4}$	$5\frac{3}{4}$	$2\frac{7}{8}$	$1\frac{7}{8}$	$1\frac{1}{4}$	5.40
1	7	3	2	$1\frac{1}{2}$	5.80
$1\frac{1}{4}$	$7\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{5}{8}$	2	7.95

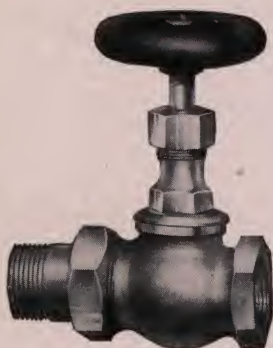
Send for special folder containing full description.

CAPITOL CIRCULATING COUPLINGS

THE Capitol Hot Water Circulating Coupling can be used with any water radiator valve to make up a connection whereby it is desired to have both the supply and return openings at one end of the radiator. Can be set at any angle to meet all conditions. The Circulating Coupling is screwed into the end of the radiator and the water valve screwed into the coupling.



Size Inches	Center of Coupling to End of Pipe Inches	Center of Coupling to Radiator End Inches	Center of Body to End of Spud Inches	Tapping of Radiator when Coupling is Used Inches	Price
$\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$2\frac{1}{2}$	1	\$2.50
$\frac{3}{4}$	$1\frac{3}{4}$	$1\frac{3}{4}$	$2\frac{3}{4}$	$1\frac{1}{4}$	2.80
1	2	$2\frac{1}{8}$	$2\frac{7}{8}$	$1\frac{1}{2}$	3.70
$1\frac{1}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$	$3\frac{1}{2}$	2	4.50
$1\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{1}{2}$	4	2	5.35



BRASS GLOBE RADIATOR VALVES

WITH UNION, JENKINS DISC,
ROUGH BODY,
PLATED ALL OVER

No.	Size, Inches					
	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
812	\$3.15	\$3.80	\$4.75	\$6.40	\$8.10	\$13.10

On special order, can be furnished with lock and shield.

STRAIGHTWAY RADIATOR VALVES

USED for hot water work where straightway connection is desired. Equipped with double brass gate and finished same as regular hot water radiator valves. Opens to the left; non-rising stem.

WITH UNION, ROUGH BODY,
PLATED ALL OVER



No.	Size, Inches					
	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
256	\$3.65	\$4.25	\$5.20	\$6.60	\$9.00	\$12.80

On special order, can be furnished with lock and shield.

For convenience when ordering, use numbers and sizes only.

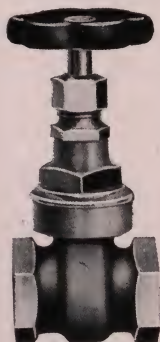
BRASS GLOBE AND ANGLE VALVES

ROUGH BODY,
IRON WHEEL,
SCREWED



Globe Valve

Size, Inches .	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Standard .	\$0.72	\$0.72	\$0.77	\$1.00	\$1.26	\$1.80	\$2.52	\$3.50	\$5.30
Jenkins Disc	1.10	1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.75



STRAIGHTWAY VALVES

No. 200—Brass, double gate, iron wheel, opens to left, non-rising stem, screwed ends.

No. 300—Standard, double gate, iron body, screwed or flanged ends.

NOTE—Orders for No. 300 must specify whether screwed or flanged ends are wanted.

Size, inches . . .	½	¾	1	1¼	1½	2
No. 200 . . .	\$1.65	\$2.05	\$2.80	\$3.70	\$5.00	\$7.30
Size, inches . . .	2	2½	3	3½	4	4½
No. 300 { screwed flanged	\$10.00 12.00	\$11.50 13.50	\$14.00 16.50	\$17.00 19.50	\$19.00 23.00	\$24.00 28.00
	Size, inches . . .	5	6	7	8	10	12
No. 300 { screwed flanged	\$27.50 31.50	\$32.50 36.50	\$45.00 49.00	\$54.00 58.00	\$90.00 95.00	\$125.00 133.00

TRITON AUTOMATIC AIR VALVES

Triton Air Valve



Triton Air and Vacuum Valve

THE Triton Air Valve is a well constructed valve made up with an expansion cylinder. In the shell of the valve is a sealed metal float with flexible top and bottom. This float contains a liquid easily affected by heat, which vaporizes at 151 degrees Fahr., expanding the corrugations, top and bottom, closing the valve against loss of steam or water. When the valve cools below the above temperature, the vapor condenses and the float contracts, thus opening the valve. Note that the valve does not open until the temperature falls to 151 degrees Fahr., thereby insuring an effective radiator when only vapor is in the system. The float being lighter than water, and sealed, carries perfect floatation, so that the valve will close tightly should there be water in the radiator. It is also equipped with baffle plate which prevents float from closing by sudden pressure. The valve may be cleaned and kept in perfect working order, as all parts are accessible. It is made entirely of metal and therefore this valve is practically indestructible. Guaranteed for five years.

No. 3. Triton Automatic Air Valve Price each, \$1.15

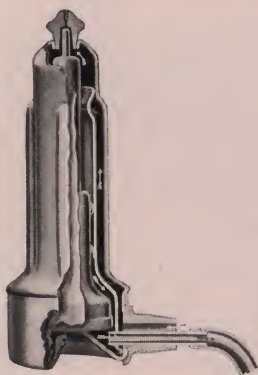
TRITON AIR AND VACUUM VALVE

The vacuum attachment permits all air to pass freely out of the radiator but prevents it from re-entering after pressure goes down. In all other respects the same as the No. 3.

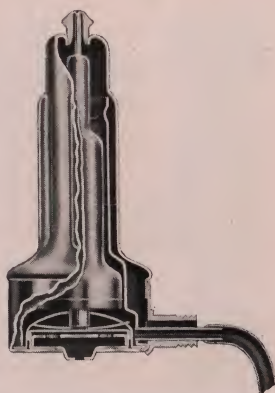
No. 4. Triton Automatic Air and Vacuum Valve. Price each, \$2.00

On special order, the No. 3 Triton Air Valve can be furnished with heat controller attachment or lock and shield at an extra charge of 25 cents net each.

HOFFMAN SIPHON AIR VALVES



Air Valve



Air and Vacuum Valve

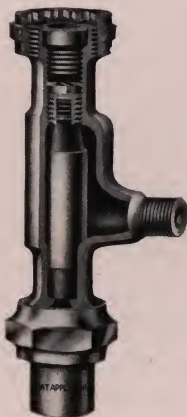
THE Hoffman Siphon Air Valve is an instrument designed for the perfect venting of air from steam heated radiators. Made entirely of metal. Non-adjustable and absolutely automatic. The float is a sealed metal chamber with a flexible bottom and contains a volatile fluid which vaporizes at a comparatively low temperature. Hot air in the radiator is therefore as freely vented as cold air, which insures a steam hot radiator whenever steam is on.

The two channels shown in the cut provide separate ways for the air and water, thus preventing the valve from "spitting" when water comes against it. The Hoffman Siphon Air Valve is guaranteed not to leak steam or water.

The Hoffman Siphon Air and Vacuum Valve is the very last word in Venting Valves. With 6 oz. pressure at the valve it permits the air to escape freely from the radiator, but automatically closes and prevents the return of air to the radiator when pressure ceases, thus holding the heat. With the exception of the bottom diaphragm which deflects and opens the valve with a 6 oz. pressure, the valve functions in every way the same as the Hoffman Siphon Air Valve. The reaction of the bottom diaphragm on cessation of pressure closes the valve and keeps it closed.

Hoffman Siphon Air Valve. List each	\$1.70
Hoffman Siphon Air and Vacuum Valve. List each	4.00
Hoffman Air Line Valve. List each	1.90
Hoffman Quick Vent, Float Air Valve. List each	8.00

Send for special descriptive circulars of the Hoffman Valves.

PAUL AUTOMATIC AIR VALVES

FOR use on Paul systems, also as drip valves on radiators. The expansion post is reinforced by a brass encasement, therefore cannot buckle. Patented spring cap prevents seat from being crushed. Lead-packed cap does away with any possibility of leakage. Tapped $\frac{1}{8}$ -inch for connection to radiator; drip connection, $\frac{1}{4}$ -inch.

Price each \$1.25

On special order can furnish Valve of same description, $6\frac{1}{2}$ inches long, with both side and bottom tapped $\frac{1}{2}$ -inch.

This Valve is adaptable for fan blast work and indirect radiation.

Minimum capacity, 200 square feet. Can also be made with union on side.

Price each \$3.00

CAPITOL AUTOMATIC AIR VALVES

CAPITOL Automatic Air Valves have combination float and expansion post.

The valve body is made of brass, nickel-plated and highly finished. The post is made of a sensitive composition, the best known for the purpose.

The bottom connection of the No. 2 valve makes it particularly adapted for indirect radiators, coils, etc.

Both regularly threaded for $\frac{1}{8}$ -inch tapping.

Can furnish No. 2 valve with $\frac{1}{4}$ -inch tapping on special order.



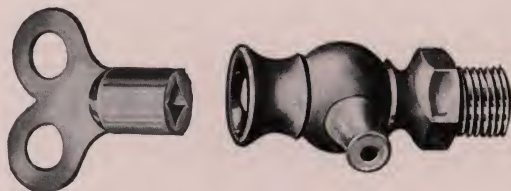
No. 1 Capitol price each, \$0.75

No. 2 Capitol, with straight shank price each, 1.00

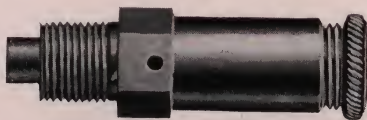
COMPRESSION AIR VALVES



No. 8. Wood Wheel, nickel-plated, per dozen \$2.00



No. 9. With Key, nickel-plated, per dozen \$1.80



No. 10. Positive and automatic, nickel-plated, per dozen . \$3.00

This valve can be used with equal facility as a positive or an automatic air valve without change or adjustment. It operates very quickly and will last a lifetime. Fully guaranteed.

All above valves threaded for $\frac{1}{8}$ -inch tapping.

FLOOR AND CEILING PLATES

PERFECTION



Inverted



Top

The No. 10 Perfection spring plate is one of the strongest and neatest now on the market. Made of cold rolled steel with the halves securely riveted by a concealed hinge. Can be opened or closed on pipe without effort.

Nickeled

For pipe	$\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	2"	$2\frac{1}{2}$ "	3"	$3\frac{1}{2}$ "	4"
Each	\$0.25	\$0.26	\$0.27	\$0.28	\$0.32	\$0.35	\$0.38	\$0.45	\$0.65	\$0.80	\$1.00	\$1.25

Black

For pipe	$\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	2"	$2\frac{1}{2}$ "	3"	$3\frac{1}{2}$ "	4"
Each	\$0.14	\$0.15	\$0.16	\$0.17	\$0.20	\$0.22	\$0.25	\$0.30	\$0.50	\$0.65	\$0.80	\$1.00

TRITON



A heavy stamped steel adjustable floor and ceiling plate; handsome in design and substantially constructed.

It is held firmly to the pipe by four jaws, stamped to conform to the pipe.

This plate cannot be equalled in finish by any plate on the market; it is nickeled on copper and highly polished.

For pipe	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Nickeled, each	\$0.27	\$0.28	\$0.32	\$0.35	\$0.38	\$0.45	\$0.65	\$0.80
Black, each	.16	.17	.20	.22	.25	.30	.50	.65

FLOOR AND CEILING PLATES

B. AND C.



Ceiling

B. and C. adjustable hinged plates are constructed so that the ceiling plate is held in place by means of a set screw, and the floor plate snapped around the pipe. Copper-plated before nickeling. Specify whether floor or ceiling plates are wanted.

Nickeled

For pipe	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
Each .	\$0.25	\$0.26	\$0.27	\$0.28	\$0.32	\$0.35	\$0.38	\$0.45	\$0.65	\$0.80	\$1.00	\$1.25

Black

For pipe	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
Each .	\$0.14	\$0.15	\$0.16	\$0.17	\$0.20	\$0.22	\$0.25	\$0.30	\$0.50	\$0.65	\$0.80	\$1.00

CHAIN PIPE HANGERS

A very convenient and economical pipe hanger, strong and easy to adjust.

Size of Chain No.	For Pipe Inches	Chain		Ox Bow Hangers	
		Tensile Strength Pounds	Price per 100 Feet	Size	Price Per C
4	1 to 1 1/4	540	\$2.75	Small	\$3.00
2	1 1/2 to 2	700	3.10		
0	2 1/2 to 3	1150	4.00		
000	3 1/2 to 8	1800	5.25	Large	4.50

Chain shipped only in packages containing 100 feet. Not necessary to order hangers unless this manner of fastening is desired. If hanger is wanted specify exact number to be shipped.



CAPITOL HOT WATER THERMOMETERS

No. 10 Straight



No. 20 Angle

THE Capitol Hot Water Thermometer will record temperatures accurately and quickly. Care should be taken to be sure that the metal tube surrounding the glass bulb is thoroughly immersed in the hot water. Lower part of the tube is immersed in a mercury bath.

If face does not set in right position when tightened, loosen the screw on the tail-piece, turn face to correct position without lifting, then tighten screw.

Regularly furnished with red spirit liquid, which indicates the temperature more clearly than thermometers made up with mercury columns.

Each thermometer tested before leaving the factory and carefully packed. Threaded for $\frac{1}{2}$ -inch tapping.

No. 10 Straight	price each \$1.70
No. 20 Angle	price each 2.00

CAPITOL GAUGES



STEAM GAUGE

Registers pressure up to 30 pounds. Movement made of non-corrosive metal. Price each without cock \$3.30

Can supply high pressure gauges when required. Write for prices.

ALTITUDE GAUGE

Indicates at the boiler the height of water in the system. Fitted with red adjustable hand, to be set at height desired by the user. The black operating hand indicates the actual height of water and therefore shows any variations in the water level.

To set: Fill the system to its proper level, move red hand to the height indicated by the operating hand. Water should be added as soon as the water falls below the height indicated by the red hand.

Ring that holds glass is secured by cotter pins to permit easy removal for setting.



Price each, with cock \$3.70

COMPOUND GAUGE

Compound gauges register steam pressure to 30 pounds and vacuum to 30 inches.

Price each, without cock \$5.00

SPECIFICATIONS COVERING ALL GAUGES LISTED

4½-inch dial, iron case, no back flange, flare nickered ring, silvered dials and black letters. Made from highest grade material with the utmost care used in testing.

CAPITOL BRONZES

WE have devoted considerable study to the question of offering the trade a line of Radiator Bronzes that would recommend itself after it had once been used. Our strongest effort has been to furnish the best values, considering carefully the rich and brilliant finish, amount of covering capacity and lasting qualities.

**DIRECTIONS FOR USE**

BRONZES—Use a bronze primer, or if you want to finish a job quickly, give the radiator first a coat of bronzing liquid; this will dry in about twenty minutes with a gloss, covering up all the dirt and rust. Then mix the bronze powder with the bronzing liquid to the consistency of cream and apply evenly, that is, in one direction only. Always use a soft brush, as a stiff brush cuts the bronze, ruining the high finish. If bronze is applied when radiator is warm, the lustre is improved.

One pound of gold or color bronze requires one quart of liquid and will cover from 250 to 300 square feet of radiation.

One pound of aluminum bronze requires about one gallon of liquid and will cover from 500 to 600 square feet of radiation.

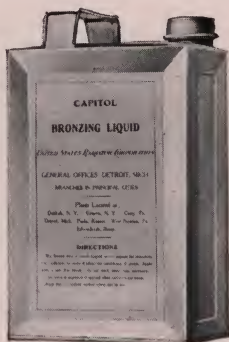
CAPITOL BRONZE POWDERS

	List, Each
Pale Gold, one-pound cans	\$0.90
Rich Gold, one-pound cans . . . . .	.90
Pure Metal Leaf, one-pound cans	1.25
(Pure Metal Leaf Bronze is the highest grade of pale gold, unrivalled in brilliancy and permanency of tone and color.)	
Aluminum, one-pound cans	1.50
Aluminum, half-pound cans . . . . .	.90
Aluminum, quarter-pound cans . . . . .	.50
(Aluminum Bronze guaranteed chemically pure.)	
Green, one-pound cans	1.25
Maroon, one pound cans	1.50
Chocolate, one-pound cans	1.50
Copper, one-pound cans	1.25
Fire, one-pound cans	1.25

To get best results we recommend the use of Capitol Bronzing Liquid.

We can furnish on application, color card showing above and other special colors.

CAPITOL BRONZING LIQUID



A LIQUID for use in mixing with gold, aluminum or other bronze powders; to act as a vehicle for them and a binder to the surface over which they are applied. The color is so light that it has no effect on the most delicate bronze tints, and the body is such that it does not interfere with the lustre of the bronze itself.

When liquid is not in use, keep can tightly covered, otherwise evaporation takes place, thickening the liquid and making it unuseable. Mix only in clean cans. Put up in gallon, half gallon and quart cans.

CAPITOL BRONZE PRIMER

Especially made for use on radiators, as it does not contain any material of non-radiating nature. It is used as a filler, making a smoother surface and reducing the amount of bronze necessary for the work. Furnished in same size cans as bronzing liquid.

CAPITOL MAROON JAPAN

Makes an attractive finish at a low cost, dries quickly with a high gloss which is not effected by heat. Recommended for use on radiators in public places where durability counts. Supplied in gallon, half-gallon and quart cans.

BLACK ASPHALTUM

For painting boilers, castings, steam or water pipes, etc. Regularly sold in one gallon cans. Special price quoted in barrel lots.



CAPITOL EXPANSION TANKS

TAPPED at top for 1-inch overflow pipe; at bottom for 1-inch expansion pipe; at side for water supply.

Made from a superior grade of heavy boiler steel, riveted and galvanized.

Are to be preferred in every case to the ordinary tanks of light iron, which are liable to collapse and have no durability.

Capacity Gallons	Size Inches	Square Feet of Radiation	Price Each Without Trimmings	Price Each Complete With Trimmings
8	10 x 20	250	\$ 7.50	\$ 9.25
10	12 x 20	300	8.00	9.75
15	12 x 30	500	9.00	10.75
18	12 x 36	600	9.50	11.25
20	14 x 30	700	12.50	14.25
26	16 x 30	950	14.00	15.75
32	16 x 36	1300	15.00	16.75
42	16 x 48	2000	16.50	18.25
66	18 x 60	3000	31.00	32.75
82	20 x 60	5000	37.00	38.75
100	22 x 60	6000	51.00	52.75

NOTE—Horizontal Expansion Tanks can be furnished on special order.

CAPITOL EXPANSION TANK BRACKETS



EASIER and cheaper to install than building a shelf. It can be adjusted for all sizes of tanks from 10 to 16 inches in diameter. Furnished with necessary screws.

Weight, 5½ pounds.

Price each, complete, \$1.75.

CAPITOL AUTOMATIC EXPANSION TANKS



USED in connection with hot water systems, they insure a full supply of water, at the same time taking care of the overflow. Made of hard wood, lined with sheet copper and furnished with cast brass fittings. Neither gauge glass nor altitude gauge is needed with them and with their use there is no danger of freezing when placed in attic or out of the way closet.

The inside measurements are:

Length, 20 inches. Width, 9 inches. Depth, 10 inches.

Can be used on any hot water job containing up to 3000 feet of radiation.

No. 302, Plain Oak, varnished, square corners . price each \$8.50

On special order can be finished in cherry, walnut or quartered oak at extra charge of \$1.25 each, net.

CAPITOL AUTOMATIC WATER FEEDERS



FOR automatically controlling the water level of low pressure heating boilers. Can be cleaned without disturbing pipe connection. Supplied with or without water gauge.

SPECIFICATIONS

Height, 12 inches. Length, 24 inches. Width, 9 inches.
Boiler connection, 1 inch. Feed water inlet, $\frac{3}{4}$ inch.

No. 61 Without gauge price each \$15.00
No. 62 With gauge price each 18.00

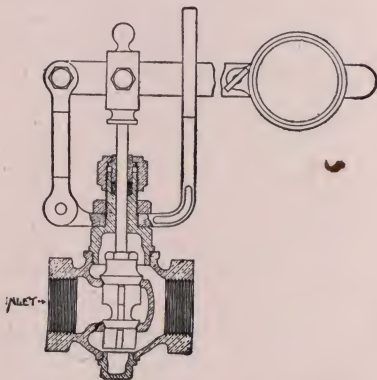
BOILER DRAW-OFF COCKS

THIS patent stop draw-off cock is made so that the plug cannot be removed. Furnished in $\frac{1}{2}$ or $\frac{3}{4}$ -inch sizes, with $\frac{3}{4}$ -inch iron pipe connection for hose.

No. 70	$\frac{1}{2}$ -inch, list each	\$0.75
No. 71	$\frac{3}{4}$ -inch, list each . . . . .	.75

CAPITOL REGULATING VALVES

VERY widely used for the control of steam, water, air or gas. Especially suitable for use in connection with heat regulating devices. Also recommended for any service where an extremely sensitive and positive action is necessary. The areas of the body and all openings are full size, and are of such form to insure an unobstructed passage. Made with two bevel seat discs. The upper opening is slightly larger to permit the lower disc to pass. No matter what the pressure, only a slight movement of the float is required either to open or close the valve.



Size, inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
Brass, screwed	\$5.50	\$5.50	\$6.00	\$7.25	\$9.00
Size, inches	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Brass, screwed	\$15.00	\$21.00	\$34.00	\$50.00	\$65.00
Iron body, screwed . . .	. . . .	. . . .	32.00	40.00	50.00

HONEYWELL HEAT GENERATORS



THESE generators are designed to meet the demand for a device to quicken the circulation in hot water heating jobs and broaden the range of temperatures.

When connected to the expansion pipe of an ordinary gravity plant, this generator seals the circuit and permits the generation of a slight pressure up to ten pounds, at which point it relieves itself through the operation of a mercury seal, eliminating any element of danger.

The pressure created by this generator will assist in remedying any unsatisfactory job of hot water heating where the radiation is insufficient, the piping too small for gravity, the circulation sluggish, or where the water boils easily from quick firing, provided, of course, the boiler is large enough to supply the heat. It also greatly improves jobs which contain long horizontal mains or where radiation is all located on the first floor. Should large piping be used in connection with the generator, one size smaller radiator tapping than regular should be used near the boiler.

It is positive and automatic, sold under the strongest guarantee, will last a lifetime and cannot get out of order.

Sectional outline view shows connection to system, circulating pipe and deflecting plate.

Price List

No. 1 for	1,200 square feet of radiation	.	.	.	.	.	.	\$25.00
No. 2 for	2,500 square feet of radiation	.	.	.	.	.	.	35.00
No. 3 for	3,500 square feet of radiation	.	.	.	.	.	.	50.00
No. 4 for	10,000 square feet of radiation	.	.	.	.	.	.	65.00

MINNEAPOLIS HEAT REGULATORS



Model No. 47



Model No. 60

The regulator complete consists of the thermostat and a motor operated by battery cells.

If it is desired to keep the house at a temperature of seventy degrees, the thermostat index is set for that degree. The instant the temperature of the room where the thermostat is located reaches that degree, the electric circuit is closed at the thermostat; the motor is released and its crank shaft makes a half revolution and then stops. By this action the draft is closed and the fire is checked.

When the temperature in the room drops below seventy degrees the other electric circuit will be closed and the motor will again be released and cause the draft to open.

If it is desired to have the house cooler at night than during the day, the thermostat may be set at a lower degree simply by turning the index. The temperature will not be allowed to fall below this point during the night.

Model No. 47 has a reliable clock, which, when set, will change the indicator at any pre-determined hour, enabling one to have the rooms cool during the night, with a resumption of the day-time temperature at the hour indicated.

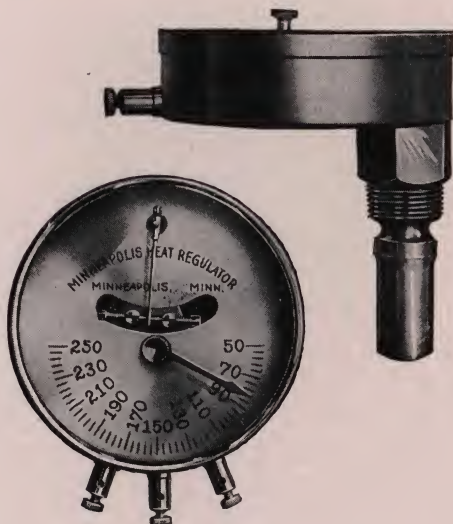
Model No. 60 is equipped with a very high grade time-piece, both clock and alarm of same running eight days with one winding. The clock has a solid brass case, repeater alarm, jeweled balance, porcelain dial and bevel glass front.

On both models the clock swings in a complete circle and does not have to be removed for winding.

Minneapolis Heat Regulators can be furnished without clock when desired.

Model No. 60—Eight day clock, List each	\$60.00
Model No. 47—One day clock, List each	47.00
Model No. 40—Without clock, List each	40.00

MINNEAPOLIS TANK REGULATORS



THIS device has the same electrical construction and is regulated in the same manner as the Minneapolis Heat Regulator—the only difference being in the extension.

In connection with the motor, it controls valves, dampers, etc., for the regulation of Hot Water, Steam, Bake Ovens, Vulcanizers, etc.

The extension is put through the side of boiler or other receptacle and firmly fastened into place by the screw thread, thereby making a perfectly tight joint, having the case and dial outside.

This regulator is used extensively in apartments, hospitals, public buildings, or any place where hot water is required throughout the year. Prevents water boiling and is a fuel saver. If necessary can be made to a range of 400 degrees Fahrenheit.

Size of thermostat, 4 inches. Length of extension, 2 inches. If longer extension is required, it can be furnished at an additional charge.

No. 65—Tank Regulator, complete..... \$65.00

CAPITOL BOILERS AND

CAPITOL RADIATOR SHIELDS



Made in Three Lengths
(Illustration shows dust retainer lowered)

EQUIPPED with patented dust retainer, which can be lowered for the purpose of cleaning. The dust retainer is held in its closed position by means of springs at each end. All dust and particles which ascend in the air currents arising from the radiator are accumulated in the dust retainer, where they may be easily removed.

Can be furnished without dust retainer if so desired.

No. of Sections	Regular *Leng'h of Shields Inches	Sheet Steel C. I. Brack-ets	Bronz'd Sheet Steel C. I. Brack-ets	Solid Brass, Electro plated Brack-ets	No. of Sections	Regular *Leng'h of Shields Inches	Sheet Steel C. I. Brack-ets	Bronz'd Sheet Steel C. I. Brack-ets	Solid Brass, Electro plated Brack-ets
3-6	15	\$3.18	\$6.09	\$9.27	16	40	\$6.07	\$9.09	\$17.61
7	17½	3.44	6.26	10.07	17	42½	6.56	9.42	18.48
8	20	3.66	6.65	10.88	18	45	7.01	9.75	19.37
9	22½	3.92	6.93	11.70	19	47½	7.13	10.15	20.25
10	25	4.21	7.23	12.51	20	50	7.50	10.44	21.15
11	27½	4.50	7.50	13.35	21	52½	7.88	10.78	22.07
12	30	4.80	7.83	14.19	22	55	8.27	11.15	22.97
13	32½	5.10	8.13	15.03	23	57½	8.66	11.50	23.90
14	35	5.38	8.42	15.89	24	60	9.00	11.88	24.83
15	37½	5.74	8.76	16.74	25	62½	9.48	12.24	25.76

When ordering, state whether full, medium or short length shields are desired. Also give name, height and number of sections in radiator. If unable to give name of radiator, state length of radiator over all at top, and distance between center of each section.

*On special order, shields of any exact lengths will be made

Shields are made special, and orders are not subject to cancellation.

ROYAL RADIATOR SHIELDS



ROYAL Radiator Shields are very effective, neat in appearance, adjustable to any radiator, easily attached or detached. As shown in illustration, they can be furnished in either top pattern or floor extension pattern.

Number of Sections or Loops in Radiators	Wood's Smooth Charcoal Iron, Cast-Iron Ends	Bronzed Gold, Copper or Aluminum or Imitation Bower-Barff	Wood's Smooth Charcoal Iron, Nickel-Plated Ends	Bronzed Gold, Copper or Aluminum Nickel-Plated Ends	Russia Iron Nickel-Plated Ends
10	\$2.40	\$3.20	\$4.00	\$4.80	\$8.00
11	2.50	3.40	4.10	5.00	8.30
12	2.65	3.60	4.25	5.20	8.60
13	2.75	3.80	4.35	5.40	8.90
14	2.90	4.00	4.50	5.60	9.20
15	3.00	4.20	4.60	5.80	9.50
16	3.10	4.40	4.75	6.00	9.80
17	3.25	4.60	4.85	6.20	10.10
18	3.35	4.80	5.00	6.40	10.40
19	3.50	5.00	5.10	6.60	10.70
20	3.60	5.20	5.25	6.80	11.00

Double the list price for Shields extending to floor. For price of Galvanized Iron Shields, add two cents per loop to Wood's Smooth Charcoal Iron, cast-iron ends. Prices include improved adjustable clamps for attaching. Above twenty sections or loops, prices given on application. The price on ten loops or under is the same. Boxing charged at cost.

WHEN ORDERING, GIVE THE FOLLOWING

Name or make of radiators if possible. Number of sections or loops in each radiator. Number of columns in each loop or section. Distance between centers of each loop or section. Width of each loop. Length of radiator over all at top. Distance of radiator from wall. Height of radiator (in ordering shields to extend to floor).

Shields are made special and orders are not subject to cancellation.

CAPITOL BOILERS AND

STANDARD STORAGE TANKS



$\frac{1}{8}$ -inch Shell, $\frac{1}{4}$ -inch Heads

Capacity Gallons	Diam. Inches	Length Feet	Approx. Weight Pounds	Regu- lar Open- ings Inches	Price of Tanks Only		Coils Built in Tanks		
					Plain	Galvan- ized	Size Inches With 4 Pipes	List Plain	List Galvan- ized
66	20	4	250	1½	\$43.00	\$57.00	1	\$12.00	\$15.00
85	20	5	290	1½	45.00	61.00	1	12.00	15.00
100	24	4	300	1½	47.00	64.00	1¼	14.00	17.00
120	24	5	350	1½	50.00	69.00	1¼	14.00	17.00
140	24	6	400	1½	52.00	74.00	1¼	16.00	19.00
150	30	4	420	2	55.00	79.00	1¼	14.00	17.00
180	30	5	480	2	60.00	90.00	1¼	14.00	17.00
220	30	6	540	2	64.00	97.00	1¼	16.00	19.00
250	30	7	600	2	70.00	106.00	1¼	18.00	21.00
295	30	8	660	2	77.00	117.00	1¼	20.00	23.00
315	36	6	740	2	82.00	126.00	1½	20.00	23.00
365	36	7	820	2	90.00	139.00	1½	22.00	25.00
420	36	8	900	2	96.00	150.00	1½	24.00	28.00
475	36	9	980	2	101.00	160.00	1½	26.00	30.00
525	36	10	1060	2	106.00	170.00	1½	28.00	32.00
430	42	6	890	2	102.00		1½	20.00	23.00
500	42	7	1000	2	110.00		1½	22.00	25.00
575	42	8	1080	2	116.00		1½	24.00	28.00
720	42	10	1260	2	128.00		1½	28.00	32.00
865	42	12	1450	2	140.00		1½	32.00	36.00
1000	42	14	1650	2	156.00		1½	36.00	40.00

Handhole in shell or head, list extra	\$ 5.00
Manhole in head, list extra	15.00
Extra flanges, 2-inch or 2½-inch, list extra	5.00
Extra flanges, 3-inch or 3½-inch, list extra	6.00

When ordering, state whether vertical or horizontal tanks are wanted. Unless otherwise ordered, tanks without coils, manholes or handholes will be shipped. We recommend that tanks containing coils also have manhole placed in head.

All standard tanks tested to 100 pounds hydrostatic pressure and guaranteed for water storage purposes at working pressure not to exceed 65 pounds.

We can furnish quotations on extra heavy tanks for use under higher pressure.

CAPITOL AUXILIARY HEATERS



THESE cast-iron heaters are a perfect substitute for the old style pipe coils formerly placed in the combustion chamber for heating water for domestic purposes. They have a greater efficiency by reason of the divided circulation than is possible in any other form and at the same time do not interfere with the draft.

Can be used in furnaces and stoves for heating rooms out of reach of hot air pipes; for heating range boilers, heating water by steam, also for superheating steam and heating compressed air.

Made in iron and brass. When iron rust in hot water is to be avoided, we recommend the use of the brass section.

All sizes can be furnished with side inlets at an addition of \$2.00 to list prices for first three sizes and \$3.00 to list prices for all other sizes.

Size Inches	Height Inches	Tapping Inches	Capacity Square Feet	Price List Iron	Price List Brass
5	3	1	30	\$ 3.25	\$ 8.50
6	3	1	35	3.60	9.00
8	4 $\frac{1}{2}$	1 $\frac{1}{4}$	75	7.00	22.00
12	6	2	125	9.60	45.50
14	7 $\frac{1}{4}$	2 $\frac{1}{2}$	200	16.00	81.00
16	7	3	300	18.00	87.00
20	8	3 $\frac{1}{2}$	500	30.00	156.00

CAPITOL WATER-BACK

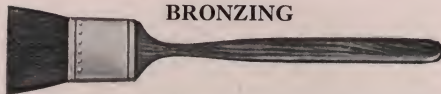


Used in square sectional boilers for heating water for domestic purposes.

Arranged with proper openings for flow and return pipes. Made of cast iron.

Tapped $\frac{3}{4}$ -inch for flow and return, measuring 2 $\frac{7}{16}$ inches on centers. Also tapped $\frac{1}{2}$ -inch for drain.

Width, 3 $\frac{3}{4}$ inches; length, 14 inches; capacity, 40 gallons; list, \$10.00.

CAPITOL BRUSHES**BRONZING**

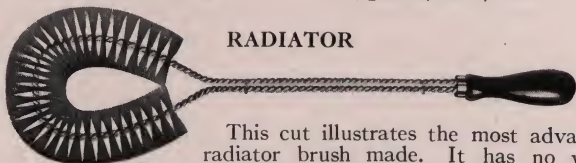
CAPITOL Bronzing Brushes have extra long handles, making them most practical for easily bronzing radiators. The bristles are of fine quality, especially suited for high grade work.

1-inch, each, \$0.40

1½-inch, each, .50

2-inch, each, \$0.60

2½-inch, each, .70

**RADIATOR**

This cut illustrates the most advanced radiator brush made. It has no wood parts to break, the bristles are held securely and it is otherwise very durable. The shape and size make it possible to remove any accumulation of dust from the interior surface of the radiator with one motion of the brush. Also handy for cleaning between spindles of stairway, under heavy furniture or in out of the way corners.

Capitol Radiator Brushes list each, \$0.80

FLUE

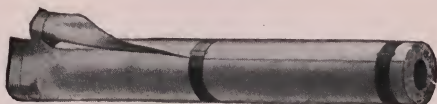
Number	Description	Price List
1	Round wire, 3 inches diameter	\$1.00
2	Round wire, 3 inches diameter, same as No. 1, except with 55-inch flexible wire handle	1.20
3	Flat tempered wire, 2 x 3¼ inches oval sides	1.30
4	Flat tempered wire, 3 x 4 inches oval sides	1.40
5	Double brush, 1¾ x 4½ x 4 inches	1.50
6	Double brush, 2½ x 6 x 4 inches	2.00
7	Round end, fine wire, 1¼ inches diameter	1.00
8	Round end, fine wire, 1½ inches diameter	1.00

CAPITOL SECTIONAL COVERINGS**AIR CELL**

For high or low pressure steam and hot water pipes our special Asbestos Air-Cell Pipe Covering is absolutely dependable.

It is a perfect insulator, light in weight, yet as strong and durable as any situation could demand. It will not disintegrate from the action of heat, however extreme, and complete satisfaction is guaranteed.

Made in 3-foot lengths; $\frac{1}{2}$, $\frac{3}{4}$ and 1-inch thickness.

WOOL FELT

This covering is composed of a special wool felt, an interlining of pure asbestos felt, heavy canvas outside and finished with brass lacquered metal bands.

Not only is this covering a highly efficient insulating material, but it presents a handsome appearance, very suitable especially for covering pipes exposed to view.

This covering is made in 1-inch, $\frac{3}{4}$ -inch and $\frac{1}{2}$ -inch thicknesses to fit all standard sized pipes. Made in 3-foot lengths.

MOULDED ASBESTOS

FOR HIGH AND LOW PRESSURE STEAM

Is a covering made of the best non-conducting materials known, being a composition of magnesia, asbestos and the necessary binding materials. It is light in weight, tough and non-combustible.

For list prices on coverings, see opposite page.

CAPITOL SECTIONAL COVERINGS

PRICE LIST

Inside Diameter of Pipe Inches	Price per Lineal Foot	Elbows Each	Tees Each	Globe Valves Each
$\frac{1}{2}$	\$0.22	\$0.30	\$0.36	\$0.54
$\frac{3}{4}$	.24	.30	.36	.54
1	.27	.30	.36	.54
$1\frac{1}{4}$	.30	.30	.36	.54
$1\frac{1}{2}$	.33	.30	.36	.54
2	.36	.36	.42	.60
$2\frac{1}{2}$	.40	.42	.48	.78
3	.45	.48	.54	.96
$3\frac{1}{2}$	.50	.54	.60	1.20
4	.60	.60	.75	1.50
$4\frac{1}{2}$	.65	.72	.90	1.85
5	.70	.90	1.20	2.25
6	.80	1.30	1.60	2.80
7	1.00	1.80	2.20	3.60
8	1.10	2.40	3.00	4.40
9	1.20	3.00	3.80	5.30
10	1.30	3.60	4.60	6.20

CAPITOL PIPE JOINT CEMENT

CAPITOL Pipe Joint Cement solves the problem of making positively air-tight joints. It is cheaper than red or white lead, and much superior. The joints can be very easily broken after long service without injury to the threads or pipe. Money, time and trouble will be saved by using this cement on all steam and hot water connections.



1-lb. cans, each . . . \$0.60

5-lb. cans, each . . . 2.25

$12\frac{1}{2}$ -lb. cans, each . . . \$4.50

25 -lb. cans, each . . . 7.50

Special prices quoted on full barrel lots.

ASBESTOS PLASTIC CEMENT

FOR BOILERS, FURNACES, HEATERS, TANKS, ETC.



THIS cement is equal to any other on the market. It is white and of lighter weight than ordinary asbestos cement felting, and is consequently a most perfect non-conductor of heat. The material is pure asbestos fibre, mixed with other high-grade fireproof insulating ingredients. It should be mixed to the consistency of ordinary mortar at least twenty-four hours before using. If properly applied, 150 pounds should cover 40 square feet of surface to the depth of one inch. The cement is put up in 50, 75 and 100-pound bags.

Price per 100 pounds \$3.50

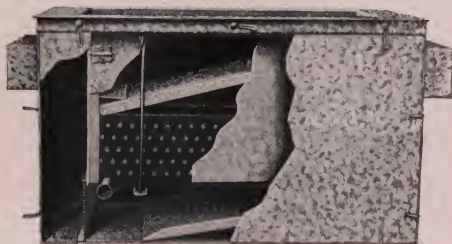
ASBESTOS BOILER PUTTY

Especially adapted for sealing openings in stoves and cast-iron boilers and as a protection for surfaces exposed to a direct fire.

Will not shrink or become porous.

5-lb. cans, per lb. list, \$0.15	25-lb. cans, per lb. list, \$0.10
10-lb. cans, per lb. list, .12	50-lb. cans, per lb. list, .08

CAPITOL INDIRECT RADIATOR CASINGS



THE Capitol Indirect Radiator Casing is built so that the air is brought in direct contact with the entire radiator instead of passing around the sides and ends; consequently the efficiency of any

indirect radiator is increased when this patented casing is used.

The air can be admitted at the side, bottom, or ends, no cold air inlet being placed on the casing unless ordered, for the reason that it may be brought in at any one of the four places desired.

The parts of the casing are neither bolted nor riveted, but have tight fitting slip joints held in place by turn clips, making it easy of access so that it can be taken apart for repairs to the radiator or for the purpose of cleaning.

It is shipped "knocked down" in such a way that the entire casing can be put up in from fifteen to twenty minutes, which means a great saving of labor. It is made double throughout by its partitions; to retain the heat, has a 2-inch air space on the sides, and the ends are lined with sheet asbestos paper.

It is regularly made up with 24 or 26 gauge galvanized iron, with hangers furnished for all kinds of construction. The rods to carry the radiators vary in size according to weight of radiator. Indirect radiators should hang 10 or 12 inches below the ceiling, with the same amount of space at the bottom of the casings, and hangers are sent out accordingly.

To obtain the cost, multiply the number of feet in the radiator by the price per foot. The following list prices include necessary hangers and lag screws:

PRICE LIST

75 feet and under	\$0.28 per foot
76 to 100 feet inclusive . . . . .	.26 per foot
101 to 125 feet inclusive . . . . .	.24 per foot
126 to 150 feet inclusive . . . . .	.22 per foot
Over 150 feet . . . . .	.20 per foot

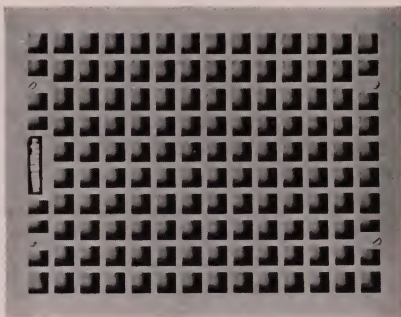
Casings without inner side walls, but asbestos lined, can be furnished at a reduction of 4 cents per foot from above list prices.

Complete circular furnished on request.



REGISTERS

FOR EITHER FLOOR OR WALL



STANDARD LIST

Size Inches	Black Japanned			Electro-plated in Nickel or Bronzed in Gold		
	Register	Register Face	Floor Border	Register	Register Face	Floor Border
6 x 8	\$1.55	\$1.00	\$1.15	\$2.80	\$2.25	\$2.40
6 x 10	1.60	1.05	1.20	3.00	2.45	2.60
6 x 12	1.85	1.25	1.45	3.50	2.90	3.10
8 x 10	1.65	1.10	1.25	3.15	2.60	2.75
8 x 12	1.90	1.30	1.50	3.65	3.05	3.25
9 x 12	2.10	1.45	1.65	4.00	3.35	3.55
9 x 15	3.95	2.65	2.65	6.50	4.90	5.20
10 x 12	2.40	1.70	1.75	4.40	3.70	3.75
10 x 14	3.15	2.20	2.20	5.25	4.30	4.30
10 x 16	4.85	2.95	2.95	7.20	5.30	5.30
12 x 14	4.35	2.80	2.80	6.85	5.35	5.35
12 x 15	4.50	2.90	2.90	7.00	5.40	5.40
12 x 16	5.60	3.50	3.50	8.25	6.15	6.15
12 x 18	6.80	3.90	3.90	9.55	6.65	6.65
12 x 19	7.50	4.00	4.00	10.35	6.85	6.85
14 x 16	8.50	4.30	4.30	11.50	7.30	7.30
14 x 18	9.00	4.50	4.50	12.00	7.50	7.50
14 x 20	9.50	4.80	4.80	13.00	8.50	8.50
16 x 18	12.00	5.30	5.30	16.20	9.50	9.50
16 x 20	12.35	6.10	6.10	16.55	10.30	10.30
16 x 22	14.75	6.70	6.70	19.50	11.50	11.50
16 x 24	15.00	7.00	7.00	20.00	12.00	12.00
18 x 21	20.50	7.75	7.75	26.00	13.25	13.25
18 x 24	21.50	8.35	8.35	27.75	14.60	14.60
20 x 24	22.00	8.60	8.60	28.20	14.80	14.80
20 x 26	23.50	9.50	9.50	32.00	17.50	17.50
20 x 30	33.50	13.50	13.50	43.00	23.50	23.50
24 x 30	38.00	17.25	17.25	50.00	29.25	28.25
24 x 36	50.00	22.00	22.00	65.50	37.50	34.25
30 x 36	67.50	28.50	28.50	90.00	51.00	41.00
30 x 42	77.50	33.00	29.00	102.00	57.50	50.50

For the price of a ventilator add 50 cents list to the regular Register list on all sizes smaller than 14 x 14 or \$1.00 list if 14 x 14 or larger. When ordering it should be stated whether Ventilators are for side wall or for ceiling.

CAPITOL BOILERS AND

BRASS POP SAFETY VALVES

WITH IRON BASE

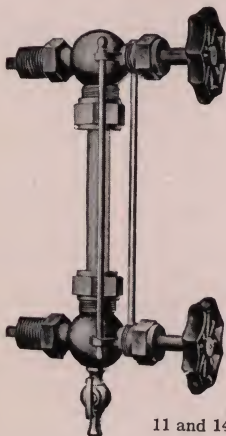


THIS low pressure pop safety valve is well proportioned and its construction includes all the features necessary to make it reliable and efficient. Regularly set at 15 pounds but it may be easily adjusted to any pressure up to twenty pounds. Can be drilled for seal without extra cost.

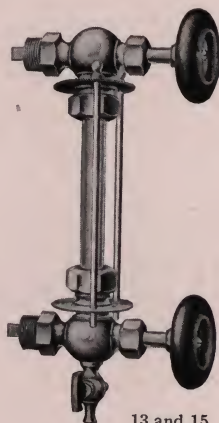
Size, inches	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Finished body	\$10.00	\$12.00	\$15.00	\$20.00	\$30.00	\$50.00	\$65.00

BRASS WATER GAUGES

SELF-CLEANING



11 and 14



13 and 15

Number	Body	Wheels	Connections Iron Pipe Size, Inches	Size of Glass	List per Set
11	Rough, Bronzed	Iron	$\frac{1}{2}$	$\frac{5}{8}$ x 12	\$3.00
13	Polished. . .	Wood	$\frac{1}{2}$	$\frac{5}{8}$ x 12	4.25
14	Rough, Bronzed	Iron	$\frac{3}{4}$	$\frac{3}{4}$ x 16	4.50
15	Polished. . .	Wood	$\frac{3}{4}$	$\frac{3}{4}$ x 16	5.50

COMPRESSION GAUGE COCKS

WITHOUT STUFFING BOX

No. 40 Wood Handle, threaded for iron pipe, $\frac{3}{8}$ -inch, list each, \$0.85

No. 44 Wood Handle, threaded for iron pipe, $\frac{1}{2}$ -inch, list each, .90

STEEL TOOL CHESTS



MADE from $\frac{1}{16}$ -inch cold rolled steel with malleable iron corner pieces and hardwood braces; fitted with heavy wrought iron hinges and hasps. Each steel chest is furnished with a first-class lock and two keys and bolts to screw down cover at front corners.

Number	Depth Inches	Width Inches	Length Inches	Description	Weight Pounds	List
711	11	12	24	One drawer .	60	\$12.50
712	14	15	30	One drawer .	95	17.00
713	16	17	36	One drawer .	125	19.00
721	11	12	24	Two drawers .	65	14.00
722	14	15	30	Two drawers .	100	18.50
723	16	17	36	Two drawers .	130	20.50
701	11	12	30	Without drawer	70	12.50
702	11	12	36	Without drawer	105	15.00
703	11	12	42	Without drawer	140	17.00
704	11	12	48	Without drawer	180	20.00

WOOD TOOL CHESTS

MADE of selected seasoned lumber throughout. All corners protected by heavy iron. Stationary till at one side for small tools. No. 789 has strong spring lock while No. 790 has two heavy hasps for padlock.

Number	Depth Inches	Width Inches	Length Inches	Weight Pounds	List
789	12	16	24	50	\$12.50
790	12	16	36	60	18.50

CAPITOL RADIATOR TRUCK

MADE IN TWO SECTIONS

THE value of the Capitol Radiator Truck will be at once apparent to every contracting steam fitter. Instead of two, three, four and even six men tugging at different sizes and shapes of radiators, one man can easily handle and move the heaviest one. It needs absolutely no adjustment and can be operated more quickly and easily than any other article of its kind.



Patented February 12, 1907

By using this truck, the radiator can be easily moved through the narrowest doorway, behind counters, under stairways or into the oddest corners of a room.

Can be furnished with either plain wheels for ordinary work, or rubber tire wheels where it is necessary to move radiators over the finest floors of wood or tile, without any danger of damaging them.

Made in one size only to fit all radiators.

Each truck is thoroughly tested and guaranteed to do the work as represented. The frames of these trucks are made of malleable iron, thereby insuring a truck that will stand the wear and tear occasioned through rough handling and constant use. Weight, 70 pounds.



Plain wheels	price each, \$25.00
Rubber tire wheels	price each, 30.00

CAPITOL SPUD WRENCHES



WITH this wrench, connections for radiator valves and elbows can be quickly made tight, without danger of injuring the union. Arranged to fit unions on $\frac{3}{4}$ -inch, 1-inch, $1\frac{1}{4}$ -inch and $1\frac{1}{2}$ -inch sizes. Price each, list \$0.60

CROWN PIPE CUTTERS



These pipe cutters are equipped with patented notched edge wheel, which saves one-half the time and labor in cutting. All wearing parts are well supported, the wheels and pins are made of the best tool steel. Numbers 2 and 3 cutters have a tapped hole in bottom of frame, which allows operator to screw in a piece of pipe to be used as an extra handle if desired.

Numbers	1	*2	3
Cut pipe, inches	$\frac{1}{8}$ to 1	$\frac{1}{2}$ to 2	$2\frac{1}{2}$ to 4
List each	\$3.00	\$5.00	\$12.00

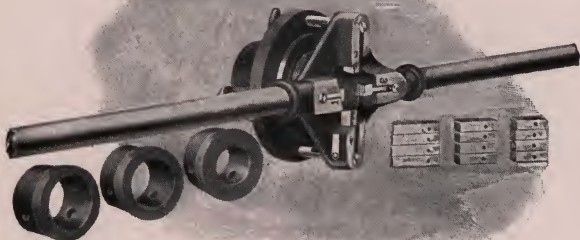
*No. 2 cutter with 3 cutting wheels can be furnished on order. Capacity $\frac{3}{4}$ -inch to 2-inch pipe. List, each \$6.00.

TOLEDO PIPE VISES

No. 1—Capacity $\frac{1}{8}$ to $2\frac{1}{2}$ -inch pipe, list \$10.00
 No. 2—Capacity $\frac{1}{8}$ to $4\frac{1}{2}$ -inch pipe, list 20.00

TOLEDO PIPE CUTTERS

Capacity, $2\frac{1}{2}$ to 6-inch pipe, inclusive. List price, complete with ratchet handle, \$80.00.

TOLEDO PIPE THREADING TOOLS**ADJUSTABLE THREADING DEVICE NO. 1**

In principle all Toledo Pipe Threading Devices are practically the same. In all but Nos. 0 and 10 the dies recede against the taper pin or post while the machine is in operation.

In the two exceptions the dies recede against a series of tapering steps.

With the No. 1 Threader one man can very readily thread 2-inch pipe, and with the larger sizes, Nos. 2, 3 and 4 which are geared machines, one man can thread up to 12-inch pipe.

No. 1A is the same as No. 1 except that it is equipped with a ratchet.

Nos. 2, 3 and 4 have ratchet handle.

By the use of these tools pipe can be threaded in corners and close places where it is not possible to use an ordinary machine.

LIST PRICES COMPLETE WITH DIES

No. 1	—Capacity 1- to 2-inch pipe, inclusive, each	\$ 24.00
No. 1A	—Ratchet, Capacity 1- to 2-inch pipe, inclusive, each	30.00
No. 2	—Geared, Capacity 2½- to 4-inch pipe, inclusive, each	100.00
No. 3	—Geared, Capacity 4½- to 8-inch pipe, inclusive, each	300.00
No. 4	—Geared, Capacity 9- to 12-inch pipe, inclusive, each	500.00

LIST PRICES OF EXTRA DIES

No. 1 or No. 1A	—Complete Set	\$10.00
No. 1 or No. 1A	—Single Set	2.50
No. 2	—Complete Set	32.00
	Single Set	8.00
No. 3	—Complete Set	60.00
	Single Set	12.00
No. 4	—Complete Set	60.00
	Single Set	20.00

TOLEDO PIPE THREADING TOOLS



ADJUSTABLE PIPE THREADING DEVICE NO. 10

These tools may be adjusted for threading several sizes of pipe with one set of dies.

These machines are so designed that they have no cams or intricate mechanism to slip or become clogged. They will thread pipe very easily because they embody the receding die principle.

Left hand dies for $\frac{1}{2}$ and $\frac{3}{4}$ -inch pipe can be furnished on special order with the No. 0 Machine—also left hand dies can be used in the No. 10 if ordered special—however, it requires a separate set of left hand dies for each size of pipe.

An extra set of dies is furnished with the No. 25, making it possible to always have a sharp set on hand.

LIST PRICES COMPLETE WITH DIES

No. 0	—Capacity $\frac{1}{8}$ to $\frac{3}{4}$ -inch pipe, inclusive, each	\$16.00
No. 10	—Capacity 1 to 2-inch pipe, inclusive, each	28.00
No. 10A	—Ratchet—Capacity 1 to 2-inch pipe, inclusive, each	34.00
No. 25	—Geared—Capacity $2\frac{1}{2}$ to 6-inch pipe, inc., each	230.00

LIST PRICE OF EXTRA DIES

No. 0	—Complete Set Right Hand	\$ 7.50
No. 0	—Single Set Right Hand	2.50
No. 0	—Single Set Left Hand, $\frac{1}{2}$ or $\frac{3}{4}$	2.50
No. 10 or 10A	—Set Right Hand	2.75
No. 10 or 10A	—Complete Set Left Hand	11.00
No. 10 or 10A	—Single Set Left Hand	2.75
No. 25	—Set Right Hand	8.00

BOILER REPAIRS**INDEX**

Name of Boiler	Page
Capitol Winchester	141
Sunray Square Sectional	142
Furman Square Sectional	146
Furman Round Sectional	149
Capitol Improved Sectional	152
Capitol Solar	154

For the convenience of our customers we give herein a price list of parts for the active lines of United States Boilers as listed in discount sheet of March 24, 1913, together with several series of the non-active boilers.

Prices on repairs for the obsolete series of boilers, formerly made by the constituent companies of this Corporation, will be promptly given upon application.

In some instances changes have been made in parts of boilers and it is therefore very essential that the factory number appearing on front of boiler be given.

To assist us in giving prompt service we request that the following detailed information be sent with all repair orders:

1. Name and description of part wanted.
2. Boiler—round or square.
3. Pattern number cast on part.
4. Size number and factory number of boiler, both of which will be found either cast on the front or on brass plate screwed on front.
5. Date of original purchase.
6. Name of dealer of whom original purchase was made.
7. If impossible to give above information a sketch with dimensions marked on same should accompany order.
8. The following information will also be of assistance in making shipment.

If a square boiler, what is width of boiler section across widest part at front? What is total height from bottom of boiler base to top of supply tapping? How many grate bars in boiler? What is the length of grate bars? Are grate bars connected by a bolt and nut or by hook cast in bar?

If a round boiler, how many grate bars in set? What is extreme length of center grate bar? Are grate bars connected by a bolt and nut or by hook cast in bar? If boiler has triangular grate bars, are they hung in a separate ring on base or by small, loose hangers? Does the grate have a center rest underneath?

When ordering repair parts send orders to our nearest Branch Office

BRANCH OFFICES :

New York
Philadelphia
Kansas City

Buffalo
Minneapolis
Omaha

Boston
Pittsburgh
Chicago

Cleveland
St. Louis
Detroit

CAPITOL WINCHESTER

Names of Parts	Series Number					
	3100 4100	3200 4200	3300 4300	3400 4400	3500 4500	3600 4600
Fire Door Slide, Curved . . .	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30	\$0.30
Center Flue Intermediate Ring	5.00	6.00	9.00	12.00	13.75	18.50
Outer Flue Intermediate Ring	5.50	7.00	9.00	11.00	14.00	18.50
Cleanout Door, Flat, O. S . .	.30	.40	.40	.40	.40	. .
Cleanout Door, Curved . . .	.40	.40	.50	.60	.60	.70
Cleanout Door Frame, O. S . .	.60	.60	.80	.80	1.00	. .
Cleanout Door, Curved . . .	.60	.70	.80	1.20	1.30	1.50
Cleanout Door Frame on Dome, Curved . . . . .	.60	.70	.80	1.20	1.30	1.50
Dome, Steam	9.50	11.50	14.50	19.00	23.00	30.00
Dome, Water	5.50	6.00	8.50	11.00	13.00	17.50
Smoke Ell, R. H. (Half) . . .	1.00	1.00	1.10	1.60	2.10	2.50
Smoke Ell, L. H. (Half) . . .	1.00	1.00	1.10	1.60	2.10	2.50
Smoke Hood, Complete . . .	3.50	3.50	3.80	4.80	5.90	6.80
Check Door . . . . .	.30	.30	.40	.40	.50	.60
Check Door Ratchet . . . .	.30	.30	.30	.30	.30	.30
Damper . . . . .	.30	.30	.30	.30	.30	.30
Damper Handle . . . . .	.30	.30	.30	.30	.30	.30
Damper Handle Ratchet . . .	.30	.30	.30	.30	.30	.30
Water Column	1.50	1.50	1.50	1.50	1.50	1.50
Water Column Pipe Con- nections	1.00	1.00	1.00	1.00	1.00	1.00
Diaphragm	3.00	3.00	3.00	3.00	3.00	3.00
Diaphragm Lever . . . . .	.30	.30	.30	.30	.30	.30
Diaphragm Plunger . . . . .	.30	.30	.30	.30	.30	.30
Diaphragm Weight . . . . .	.30	.30	.30	.30	.30	.30
Diaphragm Rubber	1.00	1.00	1.00	1.00	1.00	1.00
Diaphragm Complete	5.10	5.10	5.10	5.10	5.10	5.10
Steam Trimmings Complete . .	8.75	8.75	8.75	8.75	8.75	8.75
Push Nipple . . . . .	.40	.40	.40	.40	.60	.60
Number Plate	N. C.	N. C.	N. C.	N. C.	N. C.	N. C.
Section Connecting Bolt . . .	.40	.40	.40	.40	.50	.50
Hoe . . . . .	. .	. .	.50	.50	.50	.50
Poker . . . . .	.50	.50	.50	.50	.50	.50
Flue Scraper . . . . .	.50	.50	.50	.50	.50	.50
Number of Bars for Triangular Grate	Three	Three	Four	Five	Six	Five

When ordering repairs it is positively necessary that Serial Number and Size Number be given as well as an accurate description of parts wanted.

See Notes, page 140, when ordering.

Series numbers 1100 and 2100—1200 and 2200—1300 and 2300—1400 and 2400—1500 and 2500—1600 and 2600 are the same as above series respectively.

SUNRAY SQUARE SECTIONAL

50E, 90A, 320, 230, and WN270 Series

Names of Parts	Series Number				
	50E	90A	320	230	WN270
Front Section	\$24.20	\$30.60	\$51.30	\$52.00	. .
Plain Middle Section	18.20	26.80	41.80	49.00	. .
Plain Middle Section, Tapped	18.60	26.80	42.20	51.00	. .
Middle Next Back	18.10	. .	. .	46.00	. .
Next Back Section, Tapped	18.40	. .	. .	47.00	. .
Bridge Wall Section . . . . .	. .	. .	49.50	. .	. .
Back Section	25.90	34.90	47.80	57.00	. .
Front Section R. or L. . . . .	. .	. .	. .	. .	46.40
Plain Middle Section R. or L. . . . .	. .	. .	. .	. .	49.00
Plain Middle Section Tapped, R. or L. . . . .	. .	. .	. .	. .	49.30
Middle Next Back Sec., Tapped, L.H. . . . .	. .	. .	. .	. .	48.30
Middle Next Back Sec., Plain, R. H. . . . .	. .	. .	. .	. .	47.60
Middle Section, Tapped $\frac{3}{4}$" . . . . .	. .	. .	. .	. .	49.30
Back Section, R. or L. . . . .	. .	. .	. .	. .	54.00
Strip Closing . . . . .	. .	. .	. .	. .	.80
Ashpit Door	2.35	2.35	3.15	2.75	3.15
Ashpit Flap Door . . . . .	.30	.30	.65	.75	.75
Ashpit Flap Door, N. S. . . . .	. .	. .	. .	.30	. .
Ashpit Door Slide . . . . .	.30	.30	.30	.30	.30
Ashpit Door Handle . . . . .	.30	.30	.30	.30	.30
Ashpit Door Catch	N. C.	N. C.	N. C.	N. C.	N. C.
Base Front	1.70	2.40	2.95	5.75	10.15
Base Back	2.30	2.50	3.80	3.45	7.40
Base Back Covering Plate . . . . .	.30	.35	.35	.35	.90
Base Back Plate Catch	N. C.	N. C.	N. C.	. .	.30
Back Corrugated Plate . . . . .	. .	. .	4.10	. .	. .
Back Plain Plate . . . . .	. .	. .	5.60	. .	. .
Base Side, Blank, 1 Extension . . . . .	. .	. .	1.05	1.05	2.10
Base Side, Blank, 2 Extension . . . . .	. .	1.60	1.60	2.40	4.50
Base Side, Blank, 3 Extension . . . . .	. .	. .	. .	3.70	6.10
Base Side, Blank, 4 Extension	3.15	3.20	. .	4.50	8.50
Base Side, Blank, 5 Extension	4.15	3.50	. .	. .	10.15
Base Side, Blank, 6 Extension	4.65	4.45	4.50	. .	. .
Base Side, Blank, 7 Extension	5.30	4.90	5.20	. .	. .
Base Side, Blank, 8 Extension	6.20	6.50	6.00	. .	. .
Base Side, Blank, 9 Extension	7.30	7.10	6.80	. .	. .
Base Side, Blank, 10 Extension . . . . .	. .	. .	8.00	. .	. .
Base Side Plate Draft Opening 4 Section	2.85	. .	. .	3.70	. .
Base Side Plate Draft Opening 5 Section	4.00	. .	. .	. .	8.30
Base Side Plate Draft Opening 6 Section	4.35	. .	. .	. .	. .
Base Side Plate Draft Opening 7 Section	5.45	. .	. .	. .	. .

When ordering parts it is positively necessary that Serial Number and Size Number be given as well as an accurate description of parts wanted.

See Notes, page 140, when ordering.

SUNRAY SQUARE SECTIONAL

Continued

Name of Parts	Series Number				
	50E	90A	320	230	WN270
Base Side Plate Draft Opening 8 Section	\$ 6.00	.	.	.	.
Base Side Plate Draft Opening 9 Section	7.20	.	.	.	.
Base Side Draft Door	.35	.	.	\$0.70	\$ 1.25
Base Side Draft Door Frame	.75	.	.	1.90	4.60
Grate, Middle	.90	\$ 1.75	\$ 2.30	3.20	6.00
Grate, One-half Stationary	.60	.80	1.90	1.20	2.20
Grate Rest per Section	.	.25	.25	.	.
Grate Lock	.	.	.	.30	.30
Short Connecting Bar	.30	.30	.30	.50	.60
Long Connecting Bar per Grate	.20	.20	.20	.30	.30
Front Short Connecting Bar	.30	.	.30	.50	.
Shaker Shank	.35	.35	.30	.90	1.20
Shaker Fulcrum	.30	.30	.30	.40	.50
Shaker Handle	.50	.50	.50	.50	.50
Fire Door	1.50	2.20	2.25	2.25	.
Fire Door Frame	2.85	2.65	2.15	.	1.90
Fire Door, R. or L.	.	.	.	.	2.50
Fire Door Liner, R. or L.	.	.	.	.	.70
Fire Door Liner	1.00	1.00	.85	1.00	.
Fire Door Wheel	.30	.30	.30	.30	.30
Fire Door Catch	.	.	.	N. C.	N. C.
Fire Door Handle	.30	.30	.30	.30	.30
Fire Door Hinge Plate	.	.	.	.50	.50
Clinker Door, R. or L.	.	.	.	.50	.65
Clinker Door Liner, R. or L.	.	.	.	.40	.50
Clinker Door Handle	.	.	.	.30	.30
Cleanout Door	2.40	2.75	.	.	.
Cleanout Door Frame	2.40	2.40	.	.	.
Cleanout Door Liner	1.50	1.25	1.40	.	.
Cleanout Door, Large R. or L.	.	.	2.50	1.80	6.00
Cleanout Door, Small R. or L.	.	.	.	.	1.65
Cleanout Door Liner, Small R. or L.	.	.	.	.	.75
Cleanout Door Hinge Plate, Large	.	.	.	.50	.50
Cleanout Door Hinge Plate, Small	.	.	.	.40	.40
Cleanout Door Handle	.30	.30	.30	.30	.30
Cleanout Door Catch	.	N. C.	N. C.	N. C.	N. C.
Hing Pin Knob	N. C.	N. C.	N. C.	N. C.	N. C.
Baffle Plate Front	.	.	.	.	.60
Baffle Plate, R. H. or L. H., O. S.	.	.30	.	.	.
Smoke Box Blank (Half)	2.25	3.00	.	3.00	7.20

When ordering repairs it is positively necessary that Serial Number and Size Number be given as well as an accurate description of parts wanted.

See Notes, page 140, when ordering.

SUNRAY SQUARE SECTIONAL

Continued

Name of Parts	Series Number				
	50E	90A	320	230	WN270
Smoke Box with Check Opening	\$2.15	\$2.70	\$9.00	\$2.70	\$7.00
Smoke Box Check Frame . . . . .	.	.	.60	.70	.
Smoke Box Lid . . . . .	.30	.35	.35	.35	.80
Smoke Box Damper . . . . .	.50	.75	1.00	.75	3.25
Smoke Box Damper Connection . . . . .	.30	.30	.30	.30	.30
Smoke Box Damper Handle . . . . .	.	N. C.	N. C.	N. C.	1.30
Smoke Box Cap . . . . .	.	1.85	.	1.80	.
Smoke Box Collar 10" or 12" . . . . .	.	1.20	.	.	.
Smoke Box Segment Gauge Fulcrum . . . . .	.30	.30	.30	.30	.30
Smoke Box Segment Gauge . . . . .	.30	.30	.30	.30	.30
Smoke Box Segment Gauge Catch . . . . .	.30	.30	.30	.30	.30
Smoke Hood Complete	6.40	11.05	12.15	10.50	20.75
Indirect Damper . . . . .	.75	1.10	1.90	.	.
Water Column . . . . .	.	.	.	3.50	3.50
Water Column Connection . . . . .	.	.	.	2.00	2.00
Diaphragm	3.00	3.00	3.00	3.00	3.00
Diaphragm Lever . . . . .	.30	.30	.30	.50	.50
Diaphragm Weight, Large . . . . .	.	.	.50	.50	.50
Diaphragm Weight, Small . . . . .	.40	.40	.40	.40	.40
Diaphragm Connecting Pipe . . . . .	.30	.30	.30	.40	.40
Diaphragm Rubber	1.00	1.00	1.00	1.00	1.25
Diaphragm Complete	5.00	5.00	5.50	5.80	6.05
Steam Trimmings Complete	8.75	8.75	10.00	10.00	12.00
Number Plate	N. C.	N. C.	N. C.	N. C.	N. C.
Name Plate . . . . .	.30	.30	.30	.30	1.00
Nipple 4"—C. I. . . . .	.	.	.	.50	.50
Nipple 5¼"—C. I. . . . .	.	.	.	.60	.60
Nipple 3"—Steel . . . . .	.30	.30	.30	.	.
Nipple 4"—Steel . . . . .	.	.	.30	.	.
Washer, Large, Square . . . . .	.	.	.	.75	.75
Washer, Oval . . . . .	.	.	.	.40	.40
Washer, Medium per ½ doz. . . . .	.30	.30	.30	.30	.30
Washer, 2½" per ¼ doz. . . . .	.	.	.	.30	.30
Washer, 2" per ½ doz. . . . .	.	.	.	.30	.30
Washer, Small per ½ doz. . . . .	.30	.30	.30	.30	.
Washer, Large . . . . .	.30	.30	.30	.	.
Thumb Screw	N. C.	N. C.	N. C.	N. C.	N. C.
Thumb Latch	N. C.	N. C.	N. C.	N. C.	N. C.
Set 4 Tie Rods 4 Secs. . . . .	.70	.	.	.	.
Set 4 Tie Rods 5 Secs. . . . .	.90	1.00	.	.120	.

When ordering repairs it is positively necessary that Serial Number and Size Number be given as well as an accurate description of parts wanted.

See Notes, page 140, when ordering.

SUNRAY SQUARE SECTIONAL

Continued

Names of Parts	Series Number				
	50E	90A	320	230	WN270
Set 4 Tie Rods 6 Secs.	\$1.00	\$1.10	\$1.20	\$1.40	\$2.00
Set 4 Tie Rods 7 Secs.	1.20	1.30	1.30	1.60	2.25
Set 4 Tie Rods 8 Secs. . . . .	. . .	1.40	1.40	1.80	2.50
Set 4 Tie Rods 9 Secs. . . . .	. . .	1.60	1.60	2.00	2.90
Set 4 Tie Rods 10 Secs. . . . .	. . .	. . .	. . .	2.20	3.20
Set 4 Tie Rods 11 Secs. . . . .	. . .	. . .	. . .	. . .	3.50
Set 4 Tie Rods 12 Secs. . . . .	. . .	. . .	. . .	. . .	3.80
Hoe . . . . .	.50	.50	.50	1.00	1.25
Poker . . . . .	.50	.50	.50	1.25	1.50
Flue Brush . . . . .	.75	.75	.75	1.00	1.20
Flue Brush Handle . . . . .	.40	.40	.40	.60	.60

The 50-E Series has three connecting Rods in Set.

The 50-E Series has one less middle grate bar, than number of sections and a front and rear half bar.

The 90A and 320 Series have two less intermediate grate bars than number of sections and a front and rear half bar. The 230 and WN270 Series have one less intermediate grate bar than number of sections and a front half bar.

NOTE—20-inch grate.

50A, 50B and 550 Series Sunray same as 50E Series except grates and Shaker attachments. 500 and 530 Series same as above except having plate front and back. 20 Series Sun same as 50-E Series Sunray.

24-inch grate.

70 Series Sunray (without 1904) same as 90A Series except having plate front and back. 70 Series (with 1904) same, with water front and back. C. O. doors same but fire door larger on plate front.

90 and 90A Series are the same except latter has double shake over six sections.

24 and 24-B Series Sun same as 90 and 90A Series Sunray.

32-inch grate.

80 Series Sunray (without 1904) same as 320 Series except having plate front and back. 80 Series (with 1904) same, with water front and back. C. O. doors same but fire door larger on plate front. 800 Series same as 80 Series dated 1904, also same as 320 series except slight difference in intermediate section, although interchangeable.

32B Series Sun same as 320 Series Sunray.

32 Series Sun same as 320 Series Sunray.

Letters found with size numbers of Sunray Boilers indicate some change and should always be given when ordering repairs.

See Notes, page 140, when ordering.

FURMAN ROUND SECTIONAL

Continued

Name of Parts	Series Number				
	16"	19"	22"	25"	29"
No Ring C. O. Door Frame, O. S.	\$0.40	\$0.40	\$0.50	\$0.50	\$0.50
One Ring C. O. Door, O. S. . . . .	.65	.65	.65	.65	.65
One Ring C. O. Door Frame, O. S. . . . .	.75	.75	.75	.75	.90
Two Ring C. O. Door, O. S. . . . .	.90	1.00	1.00	1.00	1.00
Two Ring C. O. Door Frame, O. S. . . . .	.90	1.00	1.00	1.00	1.00
Three Ring C. O. Door, O. S. . . . .	. . .	. . .	. . .	. . .	1.10
Three Ring C. O. Door Frame, O. S. . . . .	. . .	. . .	. . .	. . .	1.40
Cleanout Door, N. S. . . . .	.30	.30	.30	.30	.30
O-1-2 or 3 C. O. Door Frame N. S. . . . .	.50	.50	.50	.50	.50
Dome, Steam	13.40	18.70	21.30	25.30	34.50
Dome, Water	9.20	13.10	16.60	20.90	25.80
Smoke Ell.	1.30	1.50	1.90	2.75	3.45
Check Door . . . . .	.30	.30	.30	.30	.30
Check Door Ratchet	N. C.	N. C.	N. C.	N. C.	N. C.
Damper . . . . .	.35	.35	.60	.75	1.00
Damper Ratchet . . . . .	.30	.30	.30	.30	.30
Damper Ratchet Handle . . . . .	.30	.30	.30	.30	.30
Smoke Ell Complete	2.55	2.75	3.40	4.30	5.35
Smoke Box Clamps . . . . .	.30	.30	.30	.30	.30
Smoke Box, O. S. . . . .	. . .	1.00	1.25	1.50	. . .
Smoke Box Caps, O. S. . . . .	. . .	.30	.30	.30	. . .
Smoke Box Damper, O. S. . . . .	. . .	.35	.40	.50	. . .
Check Door, O. S. . . . .	. . .	.40	.50	.60	. . .
Check Door Frame, O. S. . . . .	. . .	.30	.30	.30	. . .
Smoke Box Complete, O. S. . . . .	. . .	3.75	4.25	4.70	. . .
Hinge Pins . . . . .	.30	.30	.30	.30	.30
Diaphragm, O. S.	3.00	3.00	3.00	3.00	3.00
Diaphragm, Pres. S.	3.00	3.00	3.00	3.00	3.00
Diaphragm Lever . . . . .	.30	.30	.30	.30	.30
Diaphragm Plunger . . . . .	.30	.30	.30	.30	.30
Diaphragm Weight, Small . . . . .	.30	.30	.30	.30	.30
Diaphragm Weight, Large . . . . .	.50	.50	.50	.50	.50
Diaphragm Rubber	1.00	1.00	1.00	1.00	1.00
Diaphragm Complete	5.10	5.10	5.10	5.10	5.10
Water Bottle	1.00	1.00	1.00	1.00	1.00
Water Bottle Connecting Pipe	1.50	1.50	1.50	1.50	1.50
Steam Trimmings Complete	8.75	8.75	8.75	8.75	8.75
Baffle Plate . . . . .	.30	.30	.30	.30	.30
Push Nipples . . . . .	.40	.60	.60	.60	.60

There are two long center bars which are shaker bars on all sizes, except 16-inch Series which has but one.

When ordering repairs it is positively necessary that Serial Number and Size Number be given as well as an accurate description of parts wanted.

See Notes, page 140, when ordering.

FURMAN ROUND SECTIONAL Continued

Name of Parts	Series Number				
	16"	19"	22"	25"	29"
Number Plate	N. C.	N. C.	N. C.	N. C.	N. C.
Name Plate	N. C.	N. C.	N. C.	N. C.	N. C.
Section Connecting Rod	\$0.40	\$0.40	\$0.50	\$0.50	\$.60
Hoe . . . . .	.50	.50	.50	.50	.50
Poker . . . . .	.50	.50	.50	.50	.50
Flue Scraper . . . . .	.50	.50	.50	.50	.50

NOTE—16" has 3 grate bars—19" and 22" have 4 bars—25" and 29" have 6 bars. Grate bars for Furman Rounds made in 3 styles known as 1st, "Old Style" (O. S.), 2nd, "New Style" (N. S.) and 3rd, "Present Style" (Pres. S.). "Old Style" has round keyed shank where gears are placed.

New Style has square shank—otherwise Old Style and New Style are same. The gear wheels for above styles have round or square holes to match.

Present Style are separate patterns.

A complete set of Old Style or New Style grate bars with proper gears can be used in old base but cannot be mixed.

Present Style bars can be used only with Present Style Base.

Approximately Round Boilers were shipped with grates as follows: 16" Old Style only; 19" Old Style to Serial No. 4036; New Style to No. 6750 and Present Style on all later numbers. 22" Old Style to No. 3563; New Style to No. 6369 and Present Style on all later numbers.

25" Old Style to Serial No. 3691; New Style to No. 6324, and Present Style to all later numbers. 29" Old Style never furnished on this size. New Style to No. 6023 and Present Style on all later numbers.

The Present Style fire pot, domes and rings with large flue openings will be furnished on repair orders for Old Style boilers which had small round openings about 2½" in diameter. 15", 18", 21" 24" and 28" correspond to above respective sizes and represent old numbering system.

CAPITOL IMPROVED SQUARE SECTIONAL 25-37 and 48 Series A or B Styles

Size	Top Header	Cored Base	Sub-Base Side	Conn. Rod R.	Conn. Rod L.
425-1425	8.40	11.25	2.60	.50	....
525-1525	10.25	12.60	3.50	.60	.40
625-1625	12.10	14.10	4.40	.70	.50
725-1725	14.00	15.50	4.70	.80	.60
825-1825	15.60	17.00	5.40	.90	.70
537-1537	20.00	14.50	3.60	.90	.70
637-1637	24.25	16.50	4.75	1.00	.80
737-1737	28.50	18.50	5.10	1.10	.90
837-1837	32.75	20.50	5.85	1.20	1.00
937-1937	37.00	22.50	6.25	1.30	1.10
1037-2037	41.25	24.50	6.90	1.40	1.20
648-	52.00	26.25	6.20	1.20	.90
748-1748	60.00	29.25	6.40	1.40	1.10
848-1848	68.00	32.00	7.40	1.60	1.30
948-1948	76.25	34.75	7.60	1.80	1.50
1048-2048	84.50	37.50	8.75	2.00	1.70
1148-2148	92.50	40.00	9.40	2.20	1.90
1248-2248	100.00	43.00	11.00	2.40	2.10
1348-2348	109.00	46.00	12.60	2.60	2.30

When ordering repairs it is positively necessary that Serial Number and Size Number be given as well as an accurate description of parts wanted.

See Notes, page 140, when ordering.

CAPITOL SOLAR

Old Style and Improved

Boiler No.	Flue Door	Flue Door Lining	Flue Door Frame	Boiler No.	Flue Door	Flue Door Lining	Flue Door Frame
702	\$0.40	\$0.30	\$0.50	1804	\$1.50	\$1.25	\$1.90
1002	.40	.30	.50	1805	2.25	1.50	2.00
1003	.75	.50	1.15	2403	1.20	.70	1.25
1004	.90	.50	1.25	2404	1.50	1.25	2.25
1402	1.00	.30	.75	2405	2.25	1.50	2.00
1403	1.20	.70	1.25	3303	1.20	.70	1.25
1404	1.50	1.25	1.75	3304	1.50	1.25	2.25
1803	1.20	.70	1.25	3305	2.25	1.50	2.00

Name of Parts	Series Number				
	70 100 16	140 20	180 23	240 26	330 29
Base Pres. Style 100 Series	\$ 6.75				
Base Old Style (16 and 70, Inclusive)	5.80	\$10.50	\$12.50	\$14.50	\$19.25
Ash Pit, Front	1.20	1.75	1.95	2.40	2.65
Ash Pit Door (A. P. D.-26-B) (26)	1.00	1.75	1.50	2.25	2.00
Ash Pit, Drop Door (L. D.-26-B) 29", 26", 29" . . . . .	.50	.50	.70	.70	.70
Ash Pit Butterfly Door . . . . .	.60	.60	1.00	1.00	1.00
Grate Ring	1.20	1.80	2.40	3.40	3.60
Grate Bar 1st . . . . .	.50	1.00	1.10	1.10	1.20
Grate Bar 2nd . . . . .	.60	1.10	1.20	1.50	1.70
Grate Bar 3rd . . . . .	.50	1.00	1.10	1.50	1.90
Grate Bar 4th				1.10	1.70
Grate Bar 5th					1.20
Shaker Arm (20-23)-(26-29) . . . . .	.45	.45	.45	.45	.45
Shaker Bracket, R., 20-8, R, 26-8, 16-20, 23-25-29 . . . . .	.30	.30	.30	.30	.30
Shaker Catch, 20-23-26-29	N. C.	N. C.	N. C.	N. C.	N. C.
Shaker Plates . . . . .	.30	.30	.30	.30	.30
Shaker Handle . . . . .	.70	.70	.70	.70	.70
Shaker Offset Rod . . . . .	.50	.50	.60	.70	.80
Connecting Rod . . . . .	.40	.40	.50	.50	.60
Wedges for Grate Rings 3/16-3/20-4/23- 26-29 . . . . .	.30	.30	.30	.30	.30
Fire Pot	33.50	47.60	56.00	67.00	83.00
Fire Pot, 16 Series	29.00				
Fire Door, 20-23-26 . . . . .	.90	1.40	1.40	1.40	2.00
Fire Pot Frame	1.60	2.25	2.00	2.25	2.60
Fire Pot Lining, 20-23-26 . . . . .	.50	.70	.70	.70	1.10
Fire Door Vent . . . . .	.30	.30	.30	.30	.30
Fire Door Handles . . . . .	.50	.50	.50	.50	.50
Clinker Door, 20-23-26-29 . . . . .	.50	.50	.50	.50	.50

When ordering repairs it is positively necessary that Serial Number and Size Number be given as well as an accurate description of parts wanted.

See Notes, page 140, when ordering.

CAPITOL SOLAR Continued

Name of Parts	Series Number				
	70 100 16	140 20	180 23	240 26	330 29
Clinker Door Frame	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90
Clinker Door Lining, 20-23-26-29 . . . . .	.30	.30	.30	.30	.30
Small Door Handles . . . . .	.35	.35	.35	.35	.35
Center Hole Section . . . . .	. . .	14.20	15.60	18.60	27.80
Outer Hole Section . . . . .	. . .	14.50	16.80	21.20	24.10
Outer and Center Hole Section . . . . .	. . .	13.50	18.80	19.90	23.80
Intermediate 16 & 100 Series 3 Nipple	11.00	. . .	. . .	. . .	. . .
Intermediate 100 Series 2 Nipple	7.00	. . .	. . .	. . .	. . .
Topheader (Steam)	15.20	22.80	27.50	41.00	48.70
Topheader (Water)	11.00	13.90	16.20	19.80	23.50
Smokehood Only	1.25	1.60	3.00	4.00	5.00
Smokehood Check Door . . . . .	.30	.30	.30	.30	.30
Smokehood Neck . . . . .	.60	.60	.75	1.00	1.50
Smokehood Door Frame . . . . .	.30	.30	.30	.30	.30
Smokehood Damper . . . . .	.30	.60	.60	.75	1.00
Smokehood Ratchet . . . . .	.30	.30	.30	.30	.30
Smokehood Damper Rod . . . . .	.30	.30	.40	.50	.50
Smokehood Damper Catch . . . . .	.30	.30	.30	.30	.30
Smokehood Damper Handle . . . . .	.30	.30	.30	.30	.30
Smokehood Complete	2.50	3.25	5.00	6.25	7.50
Diaphragm	3.00	3.00	3.00	3.00	3.00
Diaphragm Lever . . . . .	.30	.30	.30	.30	.30
Diaphragm Plunger . . . . .	.30	.30	.30	.30	.30
Diaphragm Rubber	1.00	1.00	1.00	1.00	1.00
Diaphragm Weight . . . . .	.50	.50	.50	.50	.50
Diaphragm Complete	5.10	5.10	5.10	5.10	5.10
Steam Trimmings Complete	8.75	8.75	8.75	8.75	8.75
Water Column	1.00	1.00	1.00	1.00	1.00
Section Connecting Bolt . . . . .	.40	.40	.40	.50	.50
Nipples . . . . .	.30	.30	.30	.30	.30
Hoe . . . . .	.50	.50	.50	.50	.50
Poker . . . . .	.50	.50	.50	.50	.50
Flue Brush . . . . .	.75	.75	.75	.75	.75
Flue Brush Handle . . . . .	.40	.40	.40	.40	.40
No. Grate Bars Each Series	Three	Three	Three	Four	Five

Capitol Solar Boilers were shipped from Detroit with both two and three nipple connections and at different times with three nipple sizes.

All shipments from Geneva Plant with two nipple connections.

When ordering repairs it is positively necessary that Serial Number and Size Number be given as well as an accurate description of parts wanted.

See Notes, page 140, when ordering.

CAPITOL BOILERS AND

ASSEMBLING POSITION OF BOILER SECTIONS

STEAM OR WATER

Size 180 Series

184-F-S-T-B
185-F-S-M-T-B
186-F-S-M-T-M-B
187-F-S-M-M-T-M-B

220 Series

225-F-S-M-T-B
226-F-S-M-T-M-B
227-F-S-M-M-T-M-B
228-F-S-M-T-M-T-M-B

Size G270 Series

G-276-F-S-M-T-M-B
G-277-F-S-M-M-T-M-B
G-278-F-S-M-T-M-T-M-B
G-279-F-S-M-M-T-M-T-M-B

230 Series

235-F-T-M-X-B
236-F-M-T-M-X-B
237-F-M-T-M-M-X-B
238-F-M-T-M-T-V-X-B
239-F-M-T-M-M-T-V-X-B
240-F-M-T-M-M-T-M-V-X-B

WN 270 Series

LEFT HAND

B-X-M-M-T-F
B-X-M-M-M-M-F
B-X-V-M-M-M-M-F
B-X-V-M-T-M-M-M-F
B-X-V-M-M-T-M-M-M-F
B-X-V-M-T-M-M-M-M-F
B-X-V-V-M-M-T-M-M-M-M-F

WN276
WN277
WN278
WN279
WN280
WN281
WN282

RIGHT HAND

F-A-R-M-V-B
F-A-R-M-T-V-B
F-A-R-M-T-V-V-B
F-A-R-M-M-T-V-V-B
F-A-R-M-M-M-T-V-V-B
F-A-R-M-M-M-M-T-V-V-B
F-A-R-M-M-M-M-T-V-V-V-B

KEY TO SECTIONS

F—Front.

A—Water Column Section.

S—Middle Special Tapped.

M—Middle.

T—Plain Tap.

R—Regular Tap (with $\frac{3}{4}$ " Tap for Diaphragm).

X—Next To Back Tap.

V—Next To Back Middle.

B—Back.

CAPITOL-WINCHESTER—STEAM OR WATER

Dome Outer Hole Section, Fire Pot	Dome Outer Hole Section, Center Hole Section, Fire Pot	Dome Outer Hole Section, Center Hole Section, Outer Hole Section, Fire Pot	Dome Outer Hole Section, Center Hole Section, Outer Hole Section, Center Hole Section, Fire Pot
3130-4130	3140-4140	3350-4350	3460-4460
3230-4230	3240-4240	3450-4450	3560-4560
3330-4330	3340-4340	3550-4550	3660-4660
	3440-4440	3650-4650	
	3540-4540		
	3640-4640		

NOTE.—The names of parts arranged in order as placed in boiler from dome downward.

An Outer Hole Intermediate Section is always placed next to dome. When increasing or decreasing boilers place or remove section next to fire pot.

BASIS OF BOILER RATINGS

The rating of steam boilers is based upon a gauge pressure of 2 pounds at the boiler and the condensation of 0.25 pounds of steam per square foot of radiating surface standing in still air at 70 degrees.

The rating of water boilers is based upon water leaving the boiler at 180 degrees temperature and the transmission of 150 B. T. U.'s per square foot of radiating surface standing in still air at 70 degrees.

The above are accepted factors for direct cast iron radiation.

All other forms of radiating surface must be reduced to the equivalent of direct cast iron.

The square feet of surface in mains, branches and returns should be carefully determined and the condensation for steam or cooling effect for water expressed in equivalent of direct cast iron (See Table Below) and added to direct radiation. For ordinary house heating conditions a square foot of surface in mains is assumed to condense 0.30 pounds of steam per hour, owing to the character of cooling surfaces and relatively low basement temperatures. Piping having greater exposure will have a higher condensation. (See table, page 165).

A good pipe covering reduces the heat radiated from piping.

The condensation in indirect radiators depends on the temperature and volume of air entering the stack. Prof. Allen gives a value of 0.41 pounds when 175 cubic feet of air per square of surface is admitted at zero. (See table, page 179.)

Indirect radiating surface should be expressed in its equivalent of direct cast iron (See table below.)

When the pounds steam condensed per square foot per hour of any surface is known its equivalent in direct cast iron surface may be determined by multiplying the amount of surface in square feet by the factor corresponding to that condensing power, given in table below.

Condensing Power Lbs.	Factor	Condensing Power Lbs.	Factor	Condensing Power Lbs.	Factor
.20	.80	.30	1.20	.40	1.60
.21	.84	.31	1.24	.41	1.64
.22	.88	.32	1.28	.42	1.68
.23	.92	.33	1.32	.43	1.72
.24	.96	.34	1.36	.44	1.76
.25	1.00	.35	1.40	.45	1.80
.26	1.04	.36	1.44	.46	1.84
.27	1.08	.37	1.48	.47	1.88
.28	1.12	.38	1.52	.48	1.92
.29	1.16	.39	1.56	.49	1.96

AIR REQUIRED FOR COMBUSTION

Every pound of coal burned requires for its perfect combustion a quantity of air, stated, theoretically, as 150 cubic feet. In practice, however, the amount required for good combustion will run from 50 to 100 per cent. more than the theoretical quantity. If an insufficient quantity of air is supplied the combustion will not be good and a large amount of unconsumed gas will escape up the chimney with a corresponding waste of coal and a less efficient boiler. This fact shows the importance of a good chimney flue of sufficient capacity and a boiler room having an ample fresh air supply. The supply of air must enter under the grates of the boiler to support the combustion of the fuel. If a boiler is rated for 2,000 feet steam capacity there must be developed 480,000 B. T. U. per hour to maintain this maximum capacity. Assuming the coal at a value of 12,500 B. T. U. per pound, and allowing that we can transmit 70 per cent. of the heat into the work, this would require 54.7 pounds of coal per hour. The air needed in average practice to supply 54.7 pounds of coal per hour is 16,410 cubic feet. Such a boiler will require a chimney 12 inches in diameter, if round, or 12 x 12 inches if built square, as the corners of a square chimney are not effective. A chimney fifty feet high should have a draft equal to one inch of water and a capacity of 42,000 cubic feet per hour, not counting the friction of traveling through the fuel, boiler and flues to the chimney. This friction takes 60 per cent. of the power of the chimney, thus reducing the actual air supply of such a chimney to 16,800 cubic feet per hour. Any reduction of height or pressure must be compensated for by increased area. As above size is based on best chimney construction, which is rarely obtained, a flue 14 x 14 inches as shown in table, page 160, should be selected.

CHIMNEY FLUES

EFFECTS OF A BAD DRAFT

A POOR draft means imperfect combustion and a waste of fuel for the reason that two-thirds of the value of the fuel forms into gas, and if the air supply is not sufficient this gas will not burn, merely passing off with the smoke and being lost. With such conditions more coal will be used and the boiler will fall short of its capacity.

STRENGTH OF DRAFT NEEDED

While it is necessary to have a given area in a chimney, this alone will not be sufficient. The chimney must be of sufficient height to give the velocity necessary to generate a good draft. The chimney must extend four feet above the highest point of the roof. If there should be buildings near by that are higher than the chimney there will be cause for a defective draft. Large trees close to the house will at times also interfere with the draft of a chimney.

Chimneys should be set on inside walls if possible; if set on outside walls the chimney breast should extend inside the house in preference to extending outside. This for the reason that heat is necessary to produce velocity in the chimney, and so much heat is lost from the outside wall that chimneys so located are apt to have poor drafts.

In case it is necessary to have a long smoke-pipe from the heater to the chimney, great care is necessary to prevent loss of heat. Such a smoke-pipe should be one or two inches larger than regular and should have an upward grade to chimney. It should have a good coating of asbestos covering and there should be as few turns in the pipe as possible. Care should be taken that the smoke-pipe does not project too far into the chimney, as doing so will obstruct the draft. If the flue is oblong in shape better results will be obtained if the smoke-pipe can enter on the narrow side, as this will allow the smoke and escaping gases more room in which to change their course from the horizontal smoke-pipe to the vertical flue.

Cement Block chimneys having flues in single blocks have in most cases given insufficient draft. The outside walls of flues are only 2 inches to 2½ inches thick and cause chilling of inside air. Then too the difference in inside and outside temperature because of block construction causes the thin walls to check or crack a number of times in each block allowing air leakage. Usually a course mixture is used for body of block and only a fine thin mixture for outside facing. This also permits air leakage.

If the fire does not burn properly, or if the boiler does not work up to its capacity, the draft conditions should be examined at once.

In looking over the chimney and connecting boiler, it is well—

First. To see that there are no other openings into the boiler flue, either above or below the boiler smoke-pipe, special care being exercised at the base of the flue that the boiler flue does not connect with the other flues through the soot pocket.

Second. That the division walls of the chimney, if it contains more than one flue are carried up to the top of the chimney, so that each flue is independent of the others throughout its entire length.

Third. That the area of the chimney flue is maintained full size throughout its entire height and is free from all obstructions, such as loose brick, mortar, etc., that might become lodged in it.

CHIMNEY FLUES—Continued

Fourth. That chimney extends above the highest point of the roof or other immediate surrounding elevation. This is quite important, and failure to observe same may be looked to as cause for poor draft.

Fifth. That flue is at least eight inches in depth and never less in area than size of smoke-pipe given by boiler manufacturer.

Sixth. That the boiler sets as near the chimney as possible, thus shortening length of smoke-pipe, which is desirable.

Seventh. That the smoke-pipe does not project into chimney too far and thus lessen the area of flue at this important point, where the smoke leaves pipe and enters flue.

Eighth. When tile linings are used the inside area should be equal to table chimney sizes and joints should be tightly cemented. Best practice is to flush full with thin mortar the space between tile and brick work.

For the reason that local conditions must of necessity govern the size and height of a chimney, a great deal depends upon the judgment of the heating engineer, and it would be impossible to apply the same rule in every instance. Professor William Kent gives a formula which is approved by Professor R. C. Carpenter, and from which has been compiled the following table, which we believe heating engineers will find of material assistance when considering chimney flues. This table gives the diameter of round chimneys in inches for various heights. Square chimneys with sides equal to the diameter are considered equivalent.

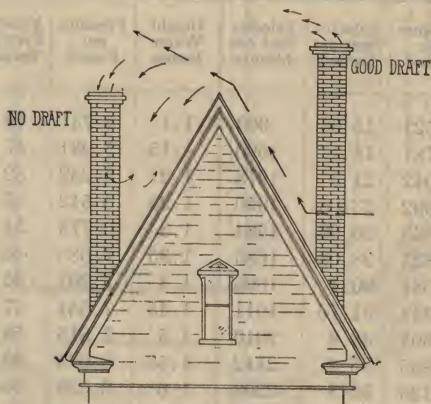
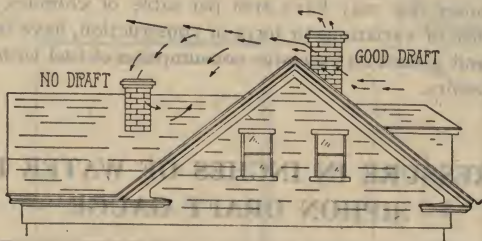
CHIMNEY FLUES

		Height of Chimney in Feet					
Steam *Square Feet Rated Boiler Capacity	Water *Square Feet Rated Boiler Capacity	30	40	50	60	80	100
250	375	7.0					
500	750	9.2	8.8	8.2	8.0		
750	1,125	10.8	10.2	9.6	9.3	8.8	8.5
1,000	1,500	12.0	11.4	10.8	10.5	10.0	9.5
1,500	2,250	14.4	13.4	12.8	12.4	11.5	11.2
2,000	3,000	16.3	15.2	14.5	14.0	13.2	12.6
3,000	4,500	18.5	18.2	17.2	16.6	15.8	15.0
4,000	6,000	22.2	20.8	19.6	19.0	17.8	17.0
5,000	7,500	24.6	23.0	21.6	21.0	19.4	18.6
6,000	9,000	26.8	25.0	23.4	22.8	21.2	20.2
7,000	10,500	28.8	27.0	25.5	24.4	23.0	21.6
8,000	12,000	30.6	28.6	26.8	26.0	24.2	23.4
9,000	13,500	32.4	30.4	28.4	27.4	25.6	24.4
10,000	15,000	34.0	32.0	30.0	28.6	27.0	25.4

*Indirect radiation should be made equivalent to direct radiation by adding 50 per cent.

CHIMNEY FLUES—Continued

The building in which a heater is to be placed should be carefully examined, or if the fitter is figuring from the plans great care should be taken to ascertain accurately just what kind of a chimney such plans provide. It should be of proper size and of sufficient height to insure a good draft.



Above illustrations show the location and height of chimneys on a house tending to make a good and poor draft. A little care and attention to the conditions will save a lot of trouble.

Chimneys which make a turn to go around a fire-place or which are offset from a vertical position will almost always prove defective unless care is exercised to make the offset very smooth and the area of the chimney larger than if flue be carried "straight up."

DRAFT GAUGE

The U-tube is the most commonly used appliance to determine the Velocity or strength of draft. It is inexpensive, simple in construction and easily operated. Providing the area of flue is ample for proper Volumn .12 to .15 inches of water is proper for small and .15 to .2 inches for large installations. The air in flue should be warm when the gauge is used.

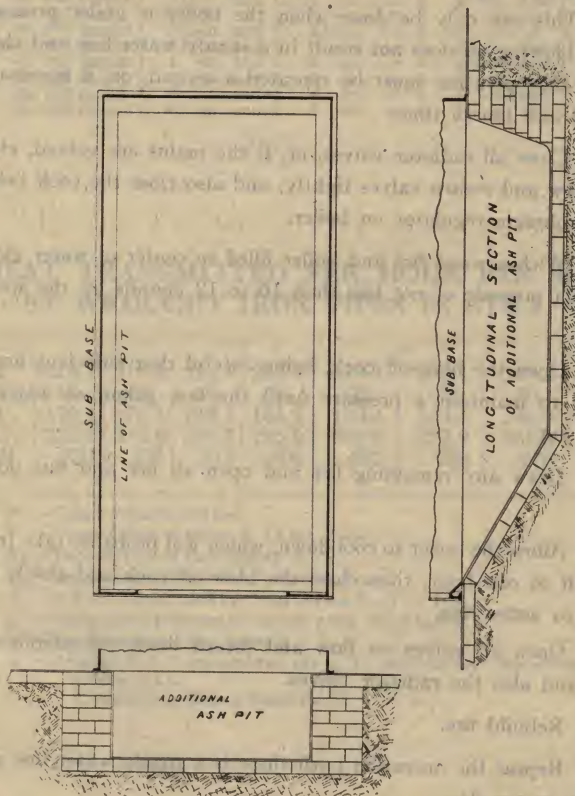
A chimney flue may have area per table of chimney sizes and still, because of variations in form or construction, have insufficient Velocity and permit an excessive consumption of fuel without satisfactory results.

**PRESSURE IN INCHES OF WATER BY
SIPHON DRAFT GAUGE**

Height Water Inches	Pressure per Pound	Velocity Feet per Second	Velocity Feet per Minute	Height Water Inches	Pressure per Pound	Velocity Feet per Second	Velocity Feet per Minute
.1	.521	15.05	903	1.1	5.731	49.9	2994
.15	.781	18.17	1090	1.15	5.991	57.0	3060
.2	1.042	21.3	1278	1.2	6.252	52.1	3126
.25	1.302	23.05	1090	1.25	6.512	53.2	3189
.3	1.563	26.06	1564	1.3	6.773	54.2	3252
.35	1.823	28.08	1685	1.35	7.033	55.3	3315
.4	2.084	30.1	1806	1.4	7.294	56.3	3378
.45	2.344	31.76	1911	1.45	7.554	57.4	3415
.5	2.605	33.6	2016	1.5	7.815	58.2	3492
.55	2.865	35.2	2112	1.55	8.075	59.3	3523
.6	3.126	36.8	2208	1.6	8.336	60.2	3612
.65	3.386	38.3	2298	1.65	8.596	61.3	3666
.7	3.647	39.8	2388	1.7	8.857	62.	3720
.75	.	41.2	2469	1.75	9.117	63.1	3774
.8	4.168	42.5	2550	1.8	9.378	63.8	3828
.85	3.907	43.8	2628	1.85	9.638	64.9	3882
.9	4.689	45.1	2706	1.9	9.899	65.6	3936
.95	4.949	46.3	2778	1.95	10.159	66.7	3987
1.0	5.210	47.5	2850	2.	10.420	67.3	4038

FOUNDATIONS

IN setting heating boilers, either round or square, the contractor should first note that the foundation is level and firm. A space left underneath the base allows the air to draw in ashpit, the same as when the draft door is open. This air leakage accounts for the large consumption of fuel often found in residence heating boilers.



As about 95 per cent of all burned out grate bars are directly traceable to the accumulation of ashes under grates, it will be found of much value, when the conditions will permit, to deepen the ashpit by either making a raised foundation of brick under edge of boiler. or by excavating and cementing the sides and ends, as shown by the illustration above.

TABLE FOR PROPORTIONING SINGLE PIPE STEAM MAINS

Square Feet Radiation	Total Length of Main in Feet					Return Diam., Inches
	20	40	75	100	150	200
100	Diam., Inches $1\frac{1}{4}$	Diam., Inches $1\frac{1}{4}$	Diam., Inches $1\frac{1}{2}$	Diam., Inches $1\frac{1}{2}$	Diam., Inches $1\frac{1}{2}$	Diam., Inches 2
200	$1\frac{1}{2}$	$1\frac{1}{2}$	2	2	2	2
300	2	2	2	2	2	$2\frac{1}{2}$
400	2	2	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$
500	$2\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	3	3	3
600	$2\frac{1}{2}$	3	3	3	$3\frac{1}{2}$	$3\frac{1}{2}$
700	$2\frac{1}{2}$	3	3	3	$3\frac{1}{2}$	$3\frac{1}{2}$
800	3	3	3	$3\frac{1}{2}$	$3\frac{1}{2}$	4
1000	3	$3\frac{1}{2}$	$3\frac{1}{2}$	4	4	4
1200	$3\frac{1}{2}$	4	4	4	4	4
1400	$3\frac{1}{2}$	4	4	4	4	4
1600	4	4	4	4	4	4
1800	4	4	4	4	4	4
2000	4	4	4	4	4	4
2500	5	5	5	5	5	5
3000	5	5	5	5	5	5
3500	5	5	5	5	5	5
4000	6	6	6	6	6	6
5000	7	7	7	7	7	7
6500	8	8	8	8	8	8

Add 50 per cent to pipe capacity for indirect radiation. Not guaranteed.

NUMBER OF GALLONS IN ROUND TANKS DIAMETER, INCHES

Depth or Length	18-inch.	24-inch.	30-inch.	36-inch.	42-inch.	48-inch.	54-inch.	60-inch.	66-inch.	72-inch.
1 Inch	1.10	1.96	3.06	4.41	5.99	7.83	9.91	12.24	14.81	17.62
1 ft.	13.	23.	37.	53.	72.	94.	119.	147.	178.	211.
1½ ft.	20.	35.	55.	79.	108.	141.	179.	220.	267.	317.
2 ft.	26.	47.	73.	106.	144.	188.	238.	294.	355.	423.
2½ ft.	33.	59.	92.	132.	180.	235.	298.	367.	444.	529.
3 ft.	40.	71.	110.	159.	216.	282.	357.	441.	533.	634.
3½ ft.	46.	82.	129.	185.	252.	329.	417.	514.	622.	740.
4 ft.	53.	94.	147.	211.	288.	376.	476.	587.	711.	846.
4½ ft.	59.	106.	165.	238.	324.	423.	536.	661.	800.	952.
5 ft.	66.	118.	183.	264.	360.	470.	597.	734.	889.	1157.
5½ ft.	73.	129.	202.	291.	396.	517.	657.	808.	977.	1263.
6 ft.	79.	141.	220.	317.	432.	564.	714.	881.	1066.	1369.
7 ft.	92.	164.	257.	370.	504.	658.	833.	1028.	1244.	1580.
8 ft.	106.	188.	294.	423.	576.	752.	952.	1175.	1422.	1792.
9 ft.	119.	212.	330.	476.	648.	846.	1071.	1322.	1599.	2003.
10 ft.	132.	235.	367.	529.	720.	940.	1190.	1469.	1777.	2115.
12 ft.	157.	282.	440.	634.	864.	1128.	1428.	1762.	2133.	2537.
14 ft.	185.	329.	514.	740.	1008.	1316.	1666.	2056.	2488.	2960.
16 ft.	211.	376.	587.	846.	1152.	1504.	1904.	2350.	2844.	3383.
18 ft.	238.	423.	661.	952.	1296.	1692.	2142.	2644.	3199.	3806.
20 ft.	264.	470.	734.	1057.	1440.	1880.	2380.	2937.	3554.	4229.

One-inch Depth is given to facilitate figuring intermediate depths.

RELATIVE VALUE OF NON-CONDUCTORS

(C. E. EMERY)

Non-conductors	Value	Non-conductors	Value
Wool felts	1.000	Loam, dry and open . . . . .	.550
Mineral wool, No. 2 . . . . .	.832	Slacked lime . . . . .	.480
Mineral wool, with tar . . . . .	.715	Gas-house carbon . . . . .	.470
Sawdust . . . . .	.680	Asbestos . . . . .	.363
Mineral wool, No. 1 . . . . .	.676	Coal ashes . . . . .	.345
Charcoal . . . . .	.632	Coke, in lumps . . . . .	.277
Pine wood, across fibre . . . . .	.553	Air space, undivided . . . . .	.186

VALUES OF FUEL

HARD coal, stove or egg size, is the standard fuel on which boiler capacities are based. If other kinds are used, careful calculation is necessary to get the equivalent results. For small boilers, stove or nut coal should be used, but on the large boilers egg coal can be burned to good advantage.

PEA COAL—Experiments on power boilers have shown that 50 per cent. more power can be developed with the same grate surface when using anthracite egg coal as against anthracite pea coal (other conditions being equal). This does not mean that egg coal is more economical, but that with pea coal a larger boiler or a larger grate surface is necessary.

This is due to the fact that pea and smaller sizes of coal pack so much closer that the draft cannot get through the coal as easily, and on that account they yield up their heat more slowly. If, however, the conditions are properly considered, there is no reason why one ton of pea coal should not give up as much heat as a ton of the same grade of coal in the larger sizes, provided, of course, each lot is equally free from dirt and slate.

The draft of the chimney is the important factor in the burning of small coal. Unless the draft is very good, pea coal or smaller sizes cannot be burned successfully.

Soft coal (bituminous) requires more grate surface for the reason that it cakes together and the draft does not go through it so easily. It also requires more boiler power, for the reason that the soot cakes on the boiler surfaces and prevents (to some extent) the heat passing from the fire to the water.

Soft coal varies considerably in its heat value in different parts of the country, as will be seen by the following table of heat values for various sections of the United States.

For a basis of boiler rating anthracite coal is taken as having an average value of 12,500 B. T. U. (British thermal units) per pound of coal, and the table of heat values will indicate the relative values of soft coal.

AVERAGE WEIGHT OF COAL

One cubic foot of hard coal weighs about	50 pounds
One cubic foot of soft coal weighs about	40 pounds
One cubic foot of coke weighs about	28 pounds

HEAT VALUE OF VARIOUS COALS IN THE UNITED STATES

FROM LATEST GOVERNMENT AND OTHER REPORTS

State	Location or Name of Mine	Kind of Coal	Value in B. T. U. per lb.
Alabama	Bibb County	Bituminous	12,232 to 14,537
Alabama	Jefferson County	Bituminous	13,383 to 14,353
Alabama	Pratt City	Bituminous	13,900 to 14,500
Arkansas	Huntington County	Bituminous	12,100 to 12,550
Arkansas	Coal Hill	Bituminous	11,600 to 11,820
Colorado	Las Arzuas County	Bituminous	12,300 to 12,600
Colorado	Trinidad District	Bituminous	12,450 to 13,100
Colorado	Routt County	Bituminous	12,300 to 12,900
Illinois	Vermillion County	Bituminous	11,321 to 11,440
Illinois	Peoria County	Bituminous	10,890 to 13,373
Illinois	Staunton County	Bituminous	12,152 to 12,546
Illinois	Williamson County	Bituminous	11,622 to 12,110
Illinois	Franklin County	Bituminous	12,250 to 12,791
Illinois	St. Clair County	Bituminous	10,950 to 11,085
Illinois	Contine	Bituminous	10,000 to 11,000
Illinois	Mount Olive	Bituminous	11,200 to 11,800
Illinois	Christopher	Bituminous	11,100 to 11,500
Indiana	Block	Bituminous	10,200 to 10,450
Iowa	Milwaukee Pea	Bituminous	10,000 to 10,300
Iowa	What Cheer	Bituminous	8,000 to 8,400
Kansas	Cherokee County	Bituminous	12,132 to 13,966
Kansas	Englevale	Bituminous	11,026 to 12,547
Kansas	Crawford County	Bituminous	12,900 to 13,100
Kentucky	Hopkins County	Bituminous	11,500 to 12,000
Kentucky	Bell County	Bituminous	12,500 to 13,050
Kentucky	Hiller	Bituminous	13,500 to 14,000
Maryland	Barrellville	Bituminous	14,100 to 14,400
Maryland	George's Creek	Bituminous	13,911 to 14,397
Maryland	Garrett County	Bituminous	13,800 to 14,000
Missouri	Bevier	Bituminous	9,800 to 10,000
Missouri	Elston	Bituminous	12,500 to 12,700
New Mexico		Bituminous	11,500 to 11,800
Ohio	Hocking Valley	Bituminous	13,000 to 13,300
Ohio	Jackson County	Bituminous	11,500 to 11,700
Oklahoma	Cool	Bituminous	11,000 to 11,200
Pennsylvania	Wyoming District	Anthracite	11,560 to 12,000
Pennsylvania	Schuylkill Region	Anthracite	10,642 to 12,180
Pennsylvania	Plymouth Mine	Anthracite	13,071 to 13,581
Pennsylvania	Pittston	Anthracite	11,215 to 12,386
Pennsylvania	Scranton	Anthracite	10,500 to 12,000
Pennsylvania	Mid Valley	Anthracite	12,228 to 12,995
Pennsylvania	Kingston	Anthracite	13,449 to 14,000
Pennsylvania	Lehigh District	Anthracite	12,500 to 13,100
Pennsylvania	Allegheny County	Bituminous	12,827 to 13,824
Pennsylvania	Cambria County	Bituminous	14,435 to 14,936
Pennsylvania	Punxatawney	Bituminous	14,301 to 14,755
Pennsylvania	Youghiogheny	Bituminous	12,379 to 13,778
Pennsylvania	Somerset County	Bituminous	14,478 to 14,853
Pennsylvania	Clearfield County	Bituminous	14,247 to 14,597
Pennsylvania	West Newton	Bituminous	12,196 to 12,400
Tennessee	Campbell County	Bituminous	13,950 to 14,500
Texas	Fort Worth	Bituminous	9,450 to 11,800
Virginia	Tazewell County Pocahontas	Bituminous	14,460 to 14,650
Washington	Carbon Hill	Bituminous	12,200 to 12,850
West Virginia	Raleigh County	Bituminous	14,666 to 15,177
West Virginia	Fayette	Bituminous	14,950 to 15,363
West Virginia	Elk Garden	Bituminous	13,900 to 14,100
West Virginia	Sharon & Smithers	Bituminous	12,800 to 14,295
West Virginia	Oregon, Cepis & Welsh	Bituminous	13,925 to 14,867
West Virginia	New River	Bituminous	14,450 to 14,700

HEAT UNITS IN WATER

BETWEEN 32 AND 212 DEGREES FAHRENHEIT, AND WEIGHT OF
WATER PER CUBIC FOOT

Tem- pera- Degrees F.	Heat Units	Weight in Pounds per Cubic Foot	Tem- pera- Degrees F.	Heat Units	Weight in Pounds per Cubic Foot	Tem- pera- Degrees F.	Heat Units	Weight in Pounds per Cubic Foot
32	0.	62.42	123	91.16	61.68	168	136.44	60.81
35	3.	62.42	124	92.17	61.67	169	137.45	60.79
40	8.	62.42	125	93.17	61.65	170	138.45	60.77
45	13.	62.42	126	94.17	61.63	171	139.46	60.75
50	18.	62.41	127	95.18	61.61	172	140.47	60.73
52	20.	62.40	128	96.18	60.60	173	141.48	60.70
54	22.01	62.40	129	97.19	61.58	174	142.49	60.68
56	24.01	62.39	130	98.19	61.56	175	143.50	60.66
58	26.01	62.38	131	99.20	61.54	176	144.51	60.64
60	28.01	62.37	132	100.20	61.52	177	145.52	60.62
62	30.01	62.36	133	101.21	61.51	178	146.52	60.59
64	32.01	62.35	134	102.21	61.49	179	147.53	60.57
66	34.02	62.34	135	103.22	61.47	180	148.54	60.55
68	36.02	62.33	136	104.22	61.45	181	149.55	60.53
70	38.02	62.31	137	105.23	61.43	182	150.56	60.50
72	40.02	62.30	138	106.23	61.41	183	151.57	60.48
74	42.03	62.28	139	107.24	61.39	184	152.58	60.46
76	44.03	62.27	140	108.25	61.37	185	153.59	60.44
78	46.03	62.25	141	109.25	61.36	186	154.60	60.41
80	48.04	62.23	142	110.26	61.34	187	155.61	60.39
82	50.04	62.21	143	111.26	61.32	188	156.62	60.37
84	52.04	62.19	144	112.27	61.30	189	157.63	60.34
86	54.05	62.17	145	113.28	61.28	190	158.64	60.32
88	56.05	62.15	146	114.28	61.26	191	159.65	60.29
90	58.06	62.13	147	115.29	61.24	192	160.67	60.27
92	60.06	62.11	148	116.29	61.22	193	161.68	60.25
94	62.06	62.09	149	117.30	61.20	194	162.69	60.22
96	64.07	62.07	150	118.31	61.18	195	163.70	60.20
98	66.07	62.05	151	119.31	61.16	196	164.71	60.17
100	68.08	62.02	152	120.32	61.14	197	165.72	60.15
102	70.09	62.00	153	121.33	61.12	198	166.73	60.12
104	72.09	61.97	154	122.33	61.10	199	167.74	60.10
106	74.10	61.95	155	123.34	61.08	200	168.75	60.07
108	76.10	61.92	156	124.35	61.06	201	169.77	60.05
110	78.11	61.89	157	125.35	61.04	202	170.78	60.02
112	80.12	61.86	158	126.36	61.02	203	171.79	60.00
114	82.13	61.83	159	127.37	61.00	204	172.80	59.97
115	83.13	61.82	160	128.37	60.98	205	173.81	59.95
116	84.13	61.80	161	129.38	60.96	206	174.83	59.92
117	85.14	61.78	162	130.39	60.94	207	175.84	59.89
118	86.14	61.77	163	131.40	60.92	208	176.85	59.87
119	87.15	61.75	164	132.41	60.90	209	177.86	59.84
120	88.15	61.74	165	133.41	60.87	210	178.87	59.82
121	89.15	61.72	166	134.42	60.85	211	179.89	59.79
122	90.16	61.70	167	135.43	60.83	212	180.90	59.76

PROPERTIES OF SATURATED STEAM

Vacuum, Inches of Mercury	Absolute Pressure, Lbs. per Sq. Inch	Tempera- ture, Fahrenheit	Total Heat above 32° F.		Latent Heat, Heat-Units	Volume. Cu. Ft. in 1 Lbs. of Steam
			In the Water Heat-Units	In the Steam Heat-Units		
27.88	1	101.83	69.8	1104.4	1034.6	333.0
25.85	2	126.15	94.0	1115.0	1021.0	173.5
23.81	3	141.52	109.4	1121.6	1012.3	118.5
21.78	4	153.01	120.9	1126.5	1005.7	90.5
19.74	5	162.28	130.1	1130.5	1000.3	73.33
17.70	6	170.06	137.9	1133.7	995.8	61.89
15.67	7	176.85	144.7	1136.5	991.8	53.56
13.63	8	182.86	150.8	1139.0	988.2	47.27
11.60	9	188.27	156.2	1141.1	985.0	42.36
9.56	10	193.22	161.1	1143.1	982.0	38.38
7.52	11	197.75	165.7	1144.9	979.2	35.10
5.49	12	201.96	169.9	1146.5	976.6	32.36
3.45	13	205.87	173.8	1148.0	974.2	30.03
1.42	14	209.55	177.5	1149.4	971.9	28.02
Pounds Steam Gauge						
	14.70	212	180.0	1150.4	970.4	26.79
0.3	15	213.0	181.0	1150.7	969.7	26.27
1.3	16	216.3	184.4	1152.0	967.6	24.79
2.3	17	219.4	187.5	1153.1	965.6	23.38
3.3	18	222.4	190.5	1154.2	963.7	22.16
4.3	19	225.2	193.4	1155.2	961.8	21.07
5.3	20	228.0	196.1	1156.2	960.0	20.08
6.3	21	230.6	198.8	1157.1	958.3	19.18
7.3	22	233.1	201.3	1158.0	956.7	18.37
8.3	23	235.5	203.8	1158.8	955.1	17.62
9.3	24	237.8	206.1	1159.6	953.5	16.93
10.3	25	240.1	208.4	1160.4	952.0	16.30
11.3	26	242.2	210.6	1161.2	950.6	15.72
12.3	27	244.4	212.7	1161.9	949.2	15.18
13.3	28	246.4	214.8	1162.6	947.8	14.67
14.3	29	248.4	216.8	1163.2	946.4	14.19
15.3	30	250.3	218.8	1163.9	945.1	13.74
16.3	31	252.2	220.7	1164.5	943.8	13.32
17.3	32	254.1	222.6	1165.1	942.5	12.93
18.3	33	255.8	224.4	1165.7	941.3	12.57
19.3	34	257.6	226.2	1166.3	940.1	12.22
20.3	35	259.3	227.9	1166.8	938.9	11.89

Taken from Kent's Hand Book, 1910.

PROPORTIONING RADIATION**FOR STEAM AND WATER HEATING**

BECAUSE of different conditions surrounding the installation of a heating apparatus, it is impossible to give any set rule that can be accepted, without modification, for all kinds of buildings to be heated. It is necessary to take into consideration all of the conditions in and around any building, and additions or deductions made to suit the requirements, no matter what rule may be used for figuring.

Nearly all rules are based on two to five pounds steam pressure and a temperature of 180 degrees for water, as indicated at the boiler when the outside temperature is at zero. When systems are designed for heating with a lower heat temperature at the boiler (vapor, vacuum, etc.), it is necessary to provide additional radiation in accordance with best practice for different systems.

It is general practice to consider 70 degrees as the standard for inside temperature and zero for the outside. When there is a greater difference between the inside and outside temperature, one per cent should be added to the radiation for each degree of difference.

Many contractors make the error of installing a too small amount of radiation. A little extra surface will give greater economy and insure a first-class working system, as well as a pleased owner. An apparatus of ample size can be regulated to give economy, which cannot be done if the apparatus is too small and requires forcing.

If direct-indirect radiation is to be used, 25 per cent should be added to the radiation necessary for direct heating. If indirect radiation is to be used, 50 per cent should be added to the amount of radiation necessary for direct heating. In schools, churches, etc., where ventilation is required, it is necessary to use some special rule for ventilating to obtain indirect surface. (Before determining the size of boiler required, all special forms of heating surface should be made the equivalent of direct radiation as shown on page 157.)

The following rules have been found to give good results, but are not guaranteed. By using these rules and providing for additional radiation on the cold sides of building and making allowance for poor construction, loose-fitting windows, doors, etc., good results will be obtained.

PROPORTIONING RADIATION—Continued FOR STEAM AND WATER HEATING

Rule No. 1

THIS rule is based on outside temperature at zero and inside temperature at 70 degrees for walls 12 inches thick. Corrections should be made for varying conditions as stated below:

C equals cubic contents in cubic feet.

W equals exposed wall in square feet.

G equals glass (windows and doors) square feet.

R equals radiation in square feet.

$$\begin{array}{rcl} \text{Steam} & & \text{Water} \\ (6\ C) + (80\ W) + (300\ G) & = R & (6\ C) + (80\ W) + (300\ G) \\ \hline 1000 & & 600 \end{array}$$

EXAMPLE.—A given room has 50 square feet of glass, 220 square feet wall and 1800 cubic feet space. Substituting the figures in place of letters in formula above:

$$\begin{array}{rcl} (6 \times 1800) + (80 \times 220) + (300 \times 50) & & \\ \hline & 1000 & \\ 10800 + 17600 + 15000 & & \\ \hline & 1000 & = 43.4 \text{ square feet steam radiation} \\ 10800 + 17600 + 15000 & & \\ \hline & 600 & = 72.3 \text{ square feet hot water radiation} \end{array}$$

Corrections for Varying Temperatures and Local Conditions

Add one per cent of radiation for each degree below zero outside or above 70 degrees inside. Subtract one per cent for each degree above zero outside or below 70 degrees inside.

RESIDENCES

For Halls and Dining Rooms, use 10 C.

For Bath Rooms, use 20 C.

For Bed Rooms, use 5 C.

EXPOSURES

Rooms on sides of prevailing winds should have radiation increased 10 per cent. Walls exposed to unheated rooms and spaces use 40 W.

PROPORTIONING RADIATION—Continued

FOR STEAM AND WATER HEATING

HEAT LOSS THROUGH WALLS

Rule based on 12-inch Brick Wall or good Frame Construction.

8-inch Brick Wall, use 120 W.

12-inch Brick Wall, use 80 W.

16-inch Brick Wall, use 70 W.

20-inch Brick Wall, use 60 W.

Solid cement and concrete block when plastered directly on wall should be figured same as 8-inch brick. Same with space between wall and plaster as 12-inch brick. Brick veneer same as 12-inch brick.

GLASS

Double Windows, use 140 G.

Skylights same as Windows.

CHURCHES AND AUDITORIUMS

For steam multiply radiation found by rule by factors below for various sizes of buildings.

CONTENTS IN CUBIC FEET	FACTOR
30,000 to 50,000 . . . . .	.9
50,000 to 70,000 . . . . .	.85
70,000 to 90,000 . . . . .	.8
90,000 to 110,000 . . . . .	.75
over 110,000 . . . . .	.7

For water determine radiation by steam rule and above factors and multiply by 1.65.

For Garages and other buildings having a large number of air changes per hour, additional radiation should be provided.

Rule No. 2

Professor R. C. Carpenter, of Cornell University, submits the following rule for determining the size radiator needed for a given room:

RULE—Add the area of the glass surface in the room to one-quarter of the exposed wall surface, and to this add from $1/55$ to $3/55$ of the cubical contents ($1/55$ for rooms on upper floor, $2/55$ for rooms on first floor and $3/55$ for large halls); then for steam multiply by .25 and for hot water by .40.

EXAMPLE—A room 20x12x10 feet with glass exposure of 48 feet, one-quarter of wall exposure (two sides exposed) 320 feet = 80, $1/55$ of 2400 = 44.

$48 + 80 + 44 = 172 \times .25 = 43$ feet for steam.

If you add $2/55$ the surface would be 54 feet.

If you add $3/55$ the surface would be 65 feet.

Corrections should be made as in Rule No. 1.

INDIRECT DATA

SETTING INDIRECT RADIATORS

Indirect Radiators are used for ventilating and for foot warmers, and for those places where radiators in the rooms would be objectionable.

In setting indirect stacks, care should be taken to see that both sides and ends come in contact with casings to prevent the passage of air other than directly through the radiator. A space of at least ten inches should be provided above the top and six to eight inches below the bottom of radiator for free circulation of air. The fresh air should be delivered to under side of radiator at opposite end from which the warm air is taken.

By using Capitol Casings for Indirect Radiators, as shown on page 132, much time and labor will be saved.

Better results are obtained by placing the register on the inside wall or near to an inside wall, when desired in floor. The warm air should be delivered to register from the top at one end of radiator.

Because the cold air comes in contact with Indirect Radiators, their cooling power is greatly increased over direct radiation and varies with the temperature, volume and velocity of air entering the stack.

Under ordinary conditions in house heating, indirect radiation will give off 400 to 650 B. T. U. for steam or 240 to 390 B. T. U. for water per square foot per hour. In ventilating school or other public buildings by gravity the above can be increased from one-half to two times. It is good engineering practice, when possible, to connect indirect stacks with a separate flow and return main from boiler.

The following table will be found of much value when designing or installing Indirect Radiators.

Sizes of Air Ducts and Registers for Indirect Heating

Square Feet of Radiation	Cold Air Duct to Stack		Warm Air Duct		Registers		Tappings Inches
	For First Floors Square Inches	For Upper Floors Square Inches	For First Floors Square Inches	For Upper Floors Square Inches	For First Floors Inches	For Upper Floors Inches	
40	40	35	60	40	10x12	8x10	1 x $\frac{3}{4}$
50	50	40	75	50	10x12	8x10	1 x $\frac{3}{4}$
60	60	45	90	60	10x14	8x12	1 $\frac{1}{4}$ x1
70	70	50	105	70	12x15	10x12	1 $\frac{1}{4}$ x1
80	80	60	120	80	12x15	10x12	1 $\frac{1}{4}$ x1
90	90	70	135	90	12x19	10x14	1 $\frac{1}{2}$ x1 $\frac{1}{4}$
100	100	75	150	100	12x19	12x15	1 $\frac{1}{2}$ x1 $\frac{1}{4}$
120	110	90	170	110	16x16	12x15	1 $\frac{1}{2}$ x1 $\frac{1}{4}$
140	120	105	190	120	16x18	12x18	2 x1 $\frac{1}{2}$
160	130	120	210	130	16x20	12x20	2 x1 $\frac{1}{2}$

INDIRECT RADIATOR DATA

*FREE AREA BETWEEN SECTIONS OF PIN INDIRECT IN SQUARE FEET

Number Sections	10 SQUARE FEET				15 SQUARE FEET				20 SQUARE FEET			
	Push Nipple	Hex. Screw Nipple			Push Nipple	Hex. Screw Nipple			Push Nipple	Hex. Screw Nipple		
		Standard C. to C. 4 1/8"	C. to C. 4 3/8"	C. to C. 4 1/2"		Standard C. to C. 4 1/4"	C. to C. 4 1/2"	C. to C. 4 3/4"		Standard C. to C. 4 5/8"	C. to C. 4 7/8"	
1	.299	.5282	.5855	.6428	.2804	.5078	.5646	.6215	.3772	.5998	.6549	.7111
2	.60	1.056	1.17	1.29	.56	1.02	1.13	1.24	1.75	1.20	1.31	1.42
3	.90	1.59	1.76	1.93	.84	1.52	1.69	1.86	1.13	1.80	1.97	2.13
4	1.20	2.12	2.34	2.57	1.12	2.03	2.26	2.49	1.51	2.40	2.62	2.84
5	1.50	2.64	2.93	3.21	1.40	2.54	2.82	3.11	1.89	3.00	3.28	3.56
6	1.80	3.17	3.51	3.86	1.68	3.05	3.39	3.73	2.26	3.60	3.93	4.27
7	2.09	3.70	4.10	4.50	1.96	3.55	3.95	4.35	2.64	4.20	4.58	4.98
8	2.39	4.23	4.68	5.14	2.24	4.06	4.52	4.97	3.02	4.80	5.25	5.69
9	2.69	4.75	5.27	5.79	2.52	4.57	5.08	5.59	3.40	5.40	5.90	6.40
10	2.99	5.28	5.86	6.43	2.80	5.08	5.65	6.22	3.77	6.00	6.56	7.11
11	3.29	5.81	6.40	7.07	3.08	5.59	6.21	6.84	4.15	6.60	7.21	7.81
12	3.59	6.34	7.03	7.71	3.37	6.09	6.78	7.46	4.53	7.20	7.88	8.52
13	3.89	6.87	7.61	8.36	3.65	6.60	7.34	8.08	4.90	7.80	8.53	9.23
14	4.19	7.40	8.20	8.10	3.93	7.11	7.90	8.70	5.28	8.40	9.17	9.94
15	4.49	7.92	8.78	9.64	4.21	7.62	8.47	9.32	5.66	9.00	9.82	10.66

*When not otherwise specified standard centers will be furnished, but when so mentioned the above indicated centers can be supplied on special order.

HEAT LOSSES FROM INDIRECT RADIATORS STANDARD PIN

Cubic feet of air passing per sq. ft. of radiation	Increase in temperature of the air passing radiator	Pounds of steam condensed per sq. ft. of radiation	B.T.U. per sq. ft. per degree difference in temperature of air and steam
50	147	.125	.80
75	143	.170	1.17
100	140	.240	1.51
125	138	.295	1.85
150	135	.355	2.22
175	132	.410	2.57
200	130	.470	2.90
225	127	.530	3.25
250	123	.585	3.60
275	121	.645	3.90
300	119	.700	4.22

In school buildings and in buildings where the flues are of ample size the amount of air passing per square foot of radiating surface may be assumed to be 200 cubic feet per hour. In residences and buildings where the flues are usually small, the amount of air passing per square foot of surface per hour does not exceed 150 cubic feet.

NOTE: Above information is quoted from Notes on Heating and Ventilation by Professor Allen.

AIR REQUIRED FOR VENTILATION

AN adult must have each hour for respiration and transpiration 215 feet or $215 \times .077 = 16.55$ pounds, and generates 290 B. T. U., of which 99 units are in form of vapor and 191 units radiate to surrounding objects.

Good practice requires not less than 1800 cubic feet of air per hour to cover all requirements for each person.

Each cubic foot gas burned requires 8.5 cubic feet air.

Each pound oil burned requires 150 cubic feet air.

Each pound candles burned requires 160 cubic feet air.

B. T. U. generated by an adult per hour, 191.

B. T. U. generated by burning 1 cubic foot gas, 600.

B. T. U. generated by burning 1 pound oil or candles. 15,000 to 18,000.

Average gas burner consumes approximately 4 cubic feet gas per hour, which equals 2,400 B. T. U. per hour.

Each flame from oil lamp, 430 to 515 B. T. U. per hour.

Each candle, 454 to 545 B. T. U. per hour.

B. T. U.—British Thermal Units.

**SPECIFICATIONS OF MASSACHUSETTS FOR
HEATING AND VENTILATING PUBLIC
BUILDINGS, SCHOOLS, ETC.**

1. That the apparatus will, with proper management, heat all the rooms including corridors to 70 degrees in any weather.

2. That with the rooms 70 degrees and a difference of not less than 40 degrees between the temperature of the outside air and that of the air entering the room at the warm air inlet, the apparatus will supply at least 30 cubic feet of air per minute for each scholar accommodated in the room.

3. That such supply of air will so circulate in the rooms that no uncomfortable draft will be felt, and that the difference in temperature between any two points on the breathing plane (5 feet) in the occupied portion of a room will not exceed 3 degrees.

4. That vitiated air in amount equal to supply from inlets will be removed through the vent ducts.

Tests are made by anemometer at both inlet and outlet registers to see that the requirements are fulfilled.

VENTILATION

Table Showing the Quantity of Air, in Cubic Feet, Discharged per Minute Through a Flue of Which the Cross-Sectional Area is One Square Foot.

(External Temperature of the Air, 32° Fahr.; Allowance for Friction, 50 Per Cent.)

Height of Flue in Feet	Excess of Temperature of Air in Flue above that of External Air							
	10°	15°	20°	25°	30°	50°	100°	150°
1	34	42	48	54	59	76	108	133
5	76	94	109	121	134	167	242	298
10	108	133	153	171	188	242	342	419
15	133	162	188	210	230	297	419	514
20	153	188	217	242	265	342	484	593
25	171	210	242	271	297	383	541	663
30	188	230	265	297	325	419	593	726
35	203	248	286	320	351	453	640	784
40	217	265	306	342	375	484	684	838
45	230	282	325	363	398	514	724	889
50	242	297	342	383	419	541	765	937
60	264	325	373	420	461	594	835	1006
70	286	351	405	465	497	643	900	1115
80	306	375	453	485	530	688	965	1185
90	324	398	460	516	564	727	1027	1225
100	342	420	485	534	594	768	1080	1325
125	383	468	542	604	662	855	1210	1480
150	420	515	596	665	730	942	1330	1630

Above table for Gravity Ventilation taken from standard authorities but not guaranteed.

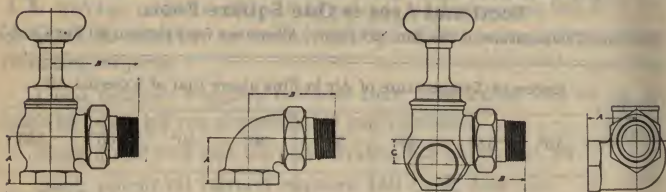
B. T. U. REQUIRED FOR HEATING AIR

This table specifies the quantity of heat in British thermal units required to raise one cubic foot of air through any given temperature interval.

External Temp.	Temperature of Air in Room									
	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°
-40°	1.802	2.027	2.252	2.479	2.703	2.928	3.154	3.379	3.604	3.829
-30°	1.540	1.760	1.980	2.200	2.420	2.640	2.860	3.080	3.300	3.520
-20°	1.290	1.505	1.720	1.935	2.150	2.365	2.580	2.795	3.010	3.225
-10°	1.051	1.262	1.473	1.684	1.892	2.102	2.311	2.522	2.732	2.943
0°	0.822	1.028	1.234	1.439	1.645	1.851	2.056	2.262	2.467	2.673
10°	0.604	0.805	1.007	1.208	1.409	1.611	1.812	2.013	2.215	2.416
20°	0.393	0.590	0.787	0.984	1.181	1.378	1.575	1.771	1.968	2.165
30°	0.192	0.385	0.578	0.770	0.963	1.155	1.345	1.540	1.733	1.925
40°	0.000	0.188	0.376	0.564	0.752	0.940	1.128	1.316	1.504	1.692
50°	0.000	0.000	0.184	0.367	0.551	0.735	0.918	1.102	1.286	1.470
60°	0.000	0.000	0.000	0.179	0.359	0.538	0.718	0.897	1.077	1.256
70°	0.000	0.000	0.000	0.000	0.175	0.350	0.525	0.700	0.875	1.049

Above table from F. Schumann's Manual of Heating and Ventilation, pages 64 and 41.

ROUGHING-IN MEASUREMENTS OF VALVES AND ELBOWS



Size Inches		$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
512, 112, 312, 412	A	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{7}{8}$	$2\frac{3}{32}$	$2\frac{1}{2}$
512, 112, 312, 412	B	$2\frac{1}{32}$	$2\frac{3}{4}$	$3\frac{3}{32}$	$3\frac{7}{16}$	$3\frac{7}{8}$	$4\frac{1}{2}$
522, 523 . . .	A	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{7}{8}$	$2\frac{3}{32}$	...
522, 523 . . .	B	$2\frac{1}{32}$	$2\frac{3}{4}$	$3\frac{3}{32}$	$3\frac{7}{16}$	$3\frac{7}{8}$	...
52, 202 . . .	A	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{7}{8}$	$2\frac{7}{32}$	$2\frac{1}{2}$
52, 202 . . .	B	$2\frac{1}{32}$	$2\frac{3}{4}$	$3\frac{5}{32}$	$3\frac{7}{16}$	$3\frac{31}{32}$	$4\frac{3}{4}$
42	A	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{3}{32}$
42	B	$2\frac{1}{32}$	$2\frac{5}{8}$	$3\frac{1}{16}$	$3\frac{3}{8}$	$3\frac{3}{4}$	$4\frac{1}{32}$
612, 212 . . .	A	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{3}{4}$	$2\frac{1}{32}$	$2\frac{5}{8}$
612, 212 . . .	B	$2\frac{1}{32}$	$2\frac{7}{8}$	$3\frac{1}{4}$	$3\frac{1}{2}$	4	$4\frac{3}{32}$
612, 212 . . .	C	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{5}{16}$	$1\frac{1}{2}$
622, 623 . . .	A	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{3}{4}$	$2\frac{1}{32}$	...
622, 623 . . .	B	$2\frac{1}{32}$	$2\frac{7}{8}$	$3\frac{1}{4}$	$3\frac{1}{2}$	4	...
622, 623 . . .	C	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{5}{16}$	...

CAPITOL BOILERS AND

WALL RADIATORS

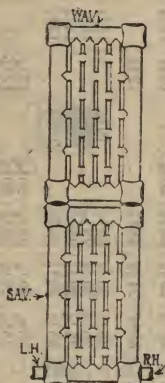


FIG. 1. Vertical. Two sections in two rows. Water or Steam.

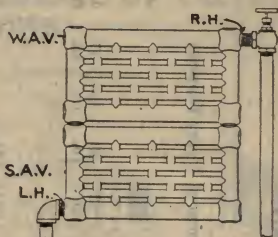


FIG. 2. Horizontal. Two sections in two rows. Water or Steam.

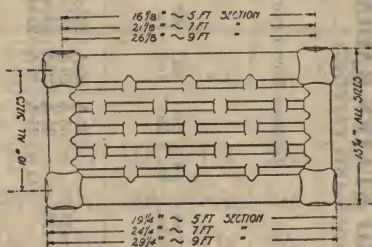


FIG. 3. Dimensions.

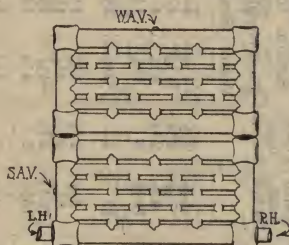


FIG. 4. Horizontal. Two sections in two rows. Water or Steam.

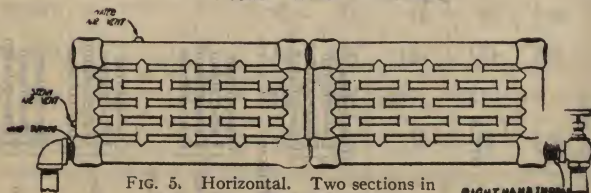


FIG. 5. Horizontal. Two sections in two rows. Water or Steam.

Athenian Wall Radiators are tapped $1\frac{1}{2}$ inches, supply and return, and are bushed per tapping list on page 121.
For further directions see page 123.

WALL RADIATORS—Continued

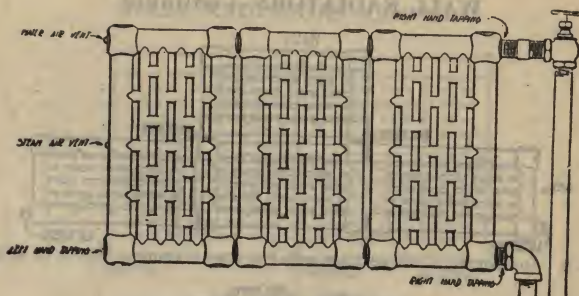


FIG. 6. Vertical.
Three sections in one row. Water or steam.

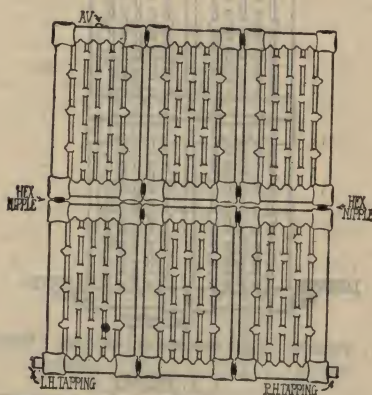


FIG. 7. Vertical.
Six sections in two rows. Water only.

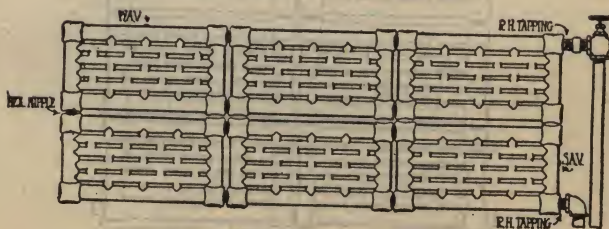


FIG. 8. Horizontal.
Six sections in two rows. Water only.

CAPITOL BOILERS AND

WALL RADIATORS—Continued

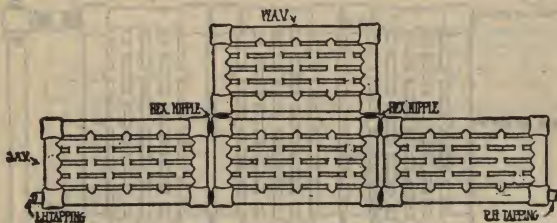


FIG. 9. Horizontal. Four sections with two rows in center. Steam or water.

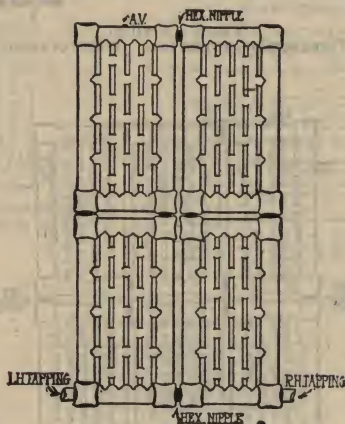


FIG. 10. Vertical. Four sections in two rows. Water only.

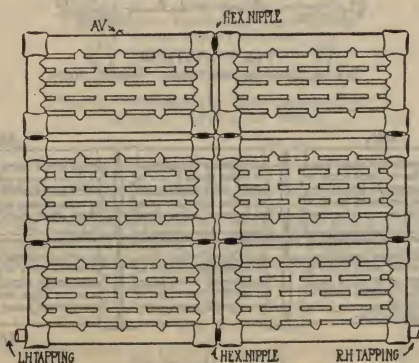


FIG. 11. Horizontal. Six sections in three rows. Water only.

WALL RADIATORS—Continued

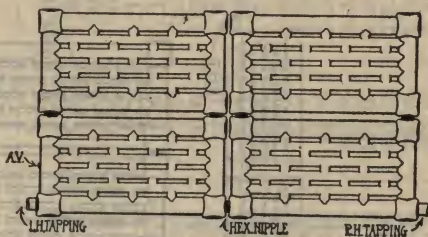


FIG. 12. Horizontal.
Four sections in two rows. Steam only.

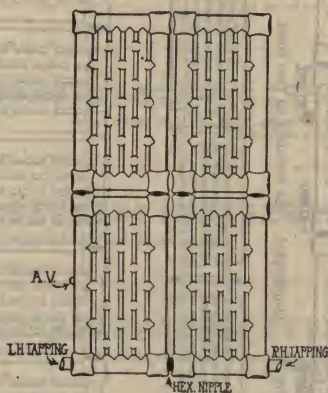


FIG. 13. Vertical.
Four sections in two rows. Steam only.

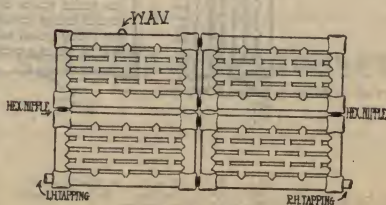
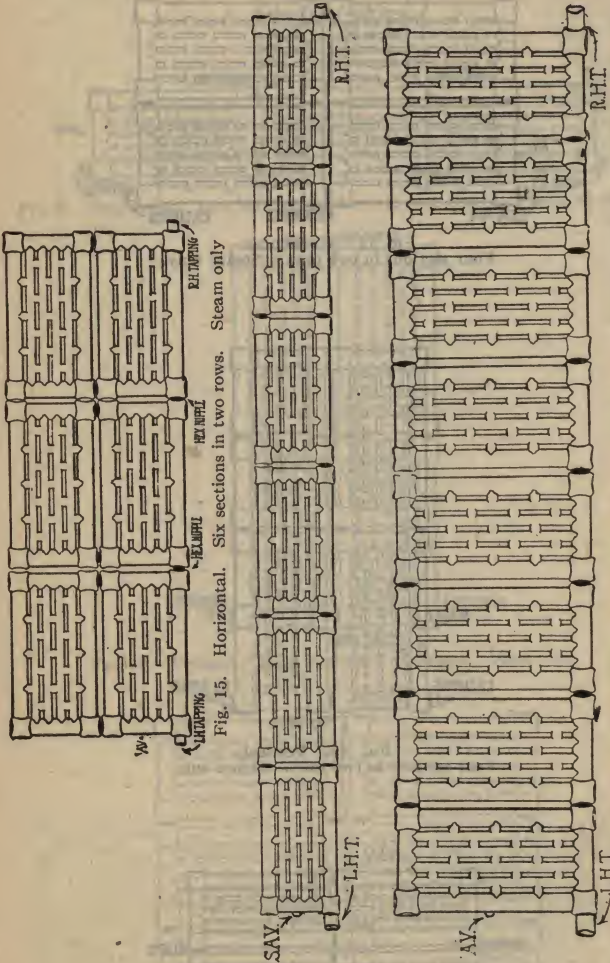


FIG. 14. Horizontal.
Four sections in two rows. Water only.

WALL RADIATORS—Continued



DIMENSIONS AND CAPACITIES OF STANDARD WROUGHT IRON PIPE

Nominal Inside Diameter	Actual Diameter, Inches		Area, Square In. Inside	Lineal Feet per sq. ft. External Surface	Nominal wt. Pounds per Lineal Foot	Length of Full Thread	Size of Tap Drill	Gallons of Water per 100 Ft. of Length	Price per Foot
	Inside	Outside							
1/8	.27	.41	.06	9.43	.24	.19	21	.3	\$0.05 1/2
1/4	.36	.54	.10	7.08	.42	.29	24	.5	.05 1/2
3/8	.49	.68	.19	5.66	.56	.30	29	1.0	.05 1/2
1/2	.62	.84	.30	4.55	.83	.39	33	1.6	.08 1/2
3/4	.82	1.05	.53	3.64	1.12	.40	37	2.7	.11 1/2
1	1.05	1.32	.86	2.90	1.67	.51	41	4.5	.16 1/2
1 1/4	1.38	1.66	1.50	2.30	2.24	.54	47	7.7	.22 1/2
1 1/2	1.61	1.90	2.04	2.01	2.68	.55	51	10.6	.27
2	2.07	2.38	3.36	1.61	3.61	.58	57	17.4	.36
2 1/2	2.47	2.88	4.78	1.33	5.74	.89	63	24.8	.57 1/2
3	3.07	3.50	7.38	1.09	7.54	.95	69	38.4	.75 1/2
3 1/2	3.55	4.	9.89	.96	9.	1.	75	51.3	.95
4	4.03	4.50	12.73	.85	10.67	1.05	81	66.1	1.08
4 1/2	4.51	5.	15.96	.76	12.34	1.10	87	82.9	1.30
5	5.05	5.56	19.99	.69	14.50	1.16	93	103.8	1.45
6	6.07	6.63	28.89	.58	18.76	1.26	101	150.0	1.88
7	7.02	7.63	38.74	.50	23.27	1.36	109	202.0	2.35
8	7.98	8.63	50.02	.44	28.18	1.46	117	260.0	2.82
9	8.94	9.63	62.73	.40	33.70	1.57	125	326.0	3.40
10	10.02	10.75	78.82	.36	40.07	1.68	133	410.0	4.25
11	11.	11.75	95.03	.33	45.00	1.79	141	495.0	4.75
12	12.	12.75	113.09	.30	48.99	1.90	149	590.0	5.20

Compiled from various Standard authorities but not guaranteed.

SQUARE FEET OF RADIATING SURFACE OF PIPE PER LINEAL FOOT

On all lengths over one foot, fractions less than tenths are added to or dropped.

Length of Pipe in ft.	SIZE OF PIPE									
	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	4	5	6
1	.275	.346	.434	.494	.622	.753	.916	1.175	1.455	1.739
2	.5	.7	.9	1.	1.2	1.5	1.8	2.4	2.9	3.5
3	.8	1.	1.3	1.5	1.9	2.3	2.7	3.5	4.4	5.2
4	1.1	1.4	1.7	2.	2.5	3.	3.6	4.7	5.8	7.
5	1.4	1.7	2.2	2.4	3.1	3.8	4.6	5.8	7.3	7.7
6	1.6	2.1	2.6	2.9	3.7	4.5	5.5	7.	8.7	10.5
7	1.9	2.4	3.	3.4	4.4	5.3	6.4	8.2	10.2	12.1
8	2.2	2.8	3.5	3.9	5.	6.	7.3	9.4	11.6	13.9
9	2.5	3.1	3.9	4.4	5.6	6.8	8.2	10.6	13.1	15.7
10	2.7	3.5	4.3	4.9	6.2	7.5	9.1	11.8	14.6	17.4
11	3.	3.8	4.8	5.4	6.8	8.3	10.	12.9	16.	19.1
12	3.3	4.1	5.2	5.9	7.5	9.	11.	14.1	17.4	20.9
13	3.6	4.5	5.6	6.4	8.1	9.8	11.9	15.3	18.9	22.6
14	3.8	4.8	6.1	6.9	8.7	10.5	12.8	16.5	20.3	24.3
15	4.1	5.2	6.5	7.4	9.3	11.3	13.7	17.6	21.8	26.1
16	4.4	5.5	6.9	7.9	10.	12.	14.6	18.8	23.2	27.8
17	4.7	5.9	7.4	8.4	10.6	12.8	15.5	20.	24.7	29.5
18	5.	6.2	7.8	8.9	11.2	13.5	16.5	21.2	26.2	31.3
19	5.2	6.6	8.3	9.4	11.8	14.3	17.4	22.3	27.6	33.1
20	5.5	6.9	8.7	9.9	12.5	15.	18.3	23.5	29.1	34.8
25	6.9	8.6	10.9	12.3	15.6	18.8	22.9	29.3	36.3	43.5
30	8.3	10.4	13.	14.8	18.7	22.5	27.5	35.3	43.6	52.1
35	9.6	12.1	15.2	17.3	21.8	26.3	32.	41.1	50.9	60.8
40	11.	13.8	17.4	19.8	24.9	30.1	36.6	47.	58.2	69.5
45	12.4	15.6	19.5	22.2	28.	33.8	41.2	52.9	65.5	78.2
50	13.8	17.3	21.7	24.7	31.1	37.6	45.8	58.7	72.7	87.
55	15.2	19.0	23.9	27.1	34.3	41.3	50.4	64.6	80.1	95.6
60	16.6	20.8	26.0	29.6	37.3	45.2	55.	70.5	87.3	104.3
65	18.0	22.6	28.2	32.1	40.5	48.8	59.5	76.4	94.5	112.9
70	19.4	24.2	30.4	34.6	43.5	52.7	64.1	82.3	101.9	121.7
75	20.7	26.0	32.6	37.1	46.6	56.5	68.7	88.1	109.1	130.4
80	22.	27.7	34.7	39.6	49.8	60.2	73.3	94.0	116.4	139.1
85	23.4	29.4	36.9	42.0	53.4	63.9	77.8	99.9	123.7	147.9
90	24.8	31.1	39.1	44.5	56.	67.8	82.4	105.8	130.9	156.5
95	26.2	32.9	41.2	46.9	59.6	71.5	87.2	111.6	138.2	165.2
100	27.5	34.6	43.4	49.4	62.2	75.3	91.6	117.5	145.5	173.9

The above table will be found very convenient in estimating the amount of radiating surface in mains, etc.

NOTE—Above information is quoted from standard authorities. Not guaranteed.

CIRCUMFERENCE AND AREA OF CIRCLES

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
1/2	1.570	.196	11	34.557	95.033	37	116.239	1075.2
3/4	2.356	.441	11 1/2	36.128	103.87	38	119.381	1134.1
1	3.141	.785	12	37.699	113.10	39	122.522	1194.6
1 1/4	3.926	1.227	12 1/2	39.269	122.72	40	125.664	1256.6
1 1/2	4.712	1.767	13	40.840	132.73	41	128.805	1320.3
1 3/4	5.497	2.405	13 1/2	42.411	143.14	42	131.947	1385.4
2	6.283	3.141	14	43.982	153.94	43	135.088	1452.2
2 1/4	7.068	3.976	14 1/2	45.553	165.13	44	138.230	1520.5
2 1/2	7.853	4.908	15	47.123	176.71	45	141.372	1590.4
2 3/4	8.639	5.939	15 1/2	48.694	188.69	46	144.513	1661.9
3	9.424	7.068	16	50.265	201.06	47	147.655	1734.9
3 1/4	10.210	8.295	16 1/2	51.836	213.82	48	150.796	1809.6
3 1/2	10.995	9.621	17	53.407	226.98	49	153.938	1885.7
3 3/4	11.781	11.045	17 1/2	54.977	240.53	50	157.080	1963.5
4	12.566	12.566	18	56.548	254.47	51	160.221	2042.8
4 1/4	13.351	14.186	18 1/2	58.119	268.80	52	163.363	2123.7
4 1/2	14.137	15.904	19	59.690	283.53	53	166.504	2206.2
4 3/4	14.922	17.721	19 1/2	61.261	298.65	54	169.646	2290.2
5	15.708	19.635	20	62.831	314.16	55	172.788	2375.8
5 1/4	16.493	21.648	20 1/2	64.402	330.06	56	175.929	2463.0
5 1/2	17.278	23.758	21	65.973	346.36	57	179.071	2551.8
5 3/4	18.064	25.967	21 1/2	67.544	363.05	58	182.212	2642.1
6	18.849	28.274	22	69.115	380.13	59	185.354	2734.0
6 1/4	19.635	30.680	22 1/2	70.685	397.61	60	188.496	2827.4
6 1/2	20.420	33.183	23	72.256	415.48	61	191.64	2922.47
6 3/4	21.205	35.785	23 1/2	73.827	433.74	62	194.78	3019.07
7	21.991	38.485	24	75.398	452.39	63	197.92	3117.25
7 1/4	22.776	41.282	24 1/2	76.969	471.44	64	201.06	3216.99
7 1/2	23.561	44.179	25	78.539	490.87	65	204.20	3318.31
7 3/4	24.347	47.173	26	81.681	530.93	66	207.34	3421.19
8	25.132	50.265	27	84.823	572.56	67	210.49	3525.65
8 1/4	25.918	53.456	28	87.964	615.75	68	213.63	3631.68
8 1/2	26.703	56.745	29	91.106	660.52	69	216.77	3739.28
8 3/4	27.488	60.132	30	94.247	706.86	70	219.91	3848.45
9	28.274	63.617	31	97.389	754.77	71	223.05	3959.19
9 1/4	29.059	67.201	32	100.531	804.25	72	226.19	4071.50
9 1/2	29.845	70.882	33	103.673	855.30	73	229.34	4185.39
9 3/4	30.630	74.662	34	106.814	907.92	74	232.48	4300.84
10	31.415	78.540	35	109.956	962.11	75	235.62	4417.86
10 1/2	32.986	86.590	36	113.097	1017.9			

To find circumference of a circle when diameter is given, multiply the given diameter by 3.1416.

To find the diameter of a circle when circumference is given, multiply the given circumference by .31831.

Square diameter and multiply by .7854 to obtain area of a circle.

TELEGRAPH CODE

SPECIAL NOTICE

PLEASE bear in mind the following in using the telegraph code:

1. Telegraph only when the matter is urgent. When a letter will answer the purpose, it is *surer*, as errors in transmission cannot then occur.

2. Where a blank occurs in a sentence, the word or words supplying the blank must *always follow* the code word of the sentence.

3. Except in cablegrams, ten words are as cheap as any number less. Avoid code where the matter can be covered in ten words without it.

4. When ordering, always specify *hard coal* or *soft coal* boilers, for *steam* or *water*, as the case may be.

5. Write plainly and begin each code word with a capital letter.

QUOTATIONS AND CORRESPONDENCE

At what price and how soon can you furnish	Dab
Quote best price on	Dabbling
Quote best price on following radiation	Dado
Wire reply quick	Daft
Specifications to follow within	Dawning
Will wire you to-morrow morning	Dagger
Will write you to-morrow morning	Dainty
Have written	Dairymaid
Answer by first mail	Daisy
Full particulars in letter of	Dale
Have received no reply from you to our letter of	Dally
Referring to your telegram of —	Damask
Referring to your letter of —	Dame
Referring to our telegram of —	Dampness
Referring to our letter of —	Damsel
Referring to telephone communication to-day	Dance
Do not understand the meaning of —	Dandy
We quote you for immediate acceptance	Danish
F. O. B. factory	Deacon

QUOTATIONS AND CORRESPONDENCE—Continued

Delivered at	Deadhead
F. O. B. factory, published freight allowance	Danger
Terms, 30 days, 2 per cent 10 days	Decapitate
Terms, 60 days, 2 per cent 10 days	Darn
Terms, net cash	Dared
Terms, draft and B/L	Decay
What is carload freight rate to?	Decigram
What is less than carload freight rate to?	Dapper
Best carload freight quoted is	Dare
Best less-than-carload freight rate quoted is	Darkness
Will wire you freight rate soon as received	Darken
Please reply at once to our telegram	Darling

ORDERS AND SHIPMENTS

Ship immediately by freight	Earl
Ship immediately by express	Eater
Ship immediately by express prepaid	Easterly
Ship by first boat	Empire
Ship by best route	Earning
Ship immediately and follow with tracer	Earthquake
Can you ship immediately?	Emperor
Can ship immediately	Elder
Can ship immediately if tapping is regular, otherwise a day or two may be necessary, but can make prompt shipment	Emerge
Can't ship time stated in your order, but can ship promptly	Emption
Ship by same route as our order No.	Eclipse
Ship what you can at once, balance soon as possible	Edict
Do not hold for other orders, but rush without delay	Edify
When will you ship order (No. or date)?	Educate
When and by what route did you ship our order?	Effigy
When can you make shipment?	Editor
Will ship in about	Elect
Your order No. — was shipped	Element
Order No. — is ready for shipment	Eligible
Your order — is ready for shipment except — Shall we make shipment?	Encompass
Hold for instructions. Order (No.)	Elbowing

ORDERS AND SHIPMENTS—Continued

Add to our order (No.)	Egg
Omit ——— from our order (No.)	Elate
Substitute on our order (No.)	Elastic
Duplicate our order (No.)	Electo
Wire trace our order (No.)	Effuse
Give date or number of order referred to	Elephant
Ship as small lot unless car going at once	Edition
We have no car going for ——— days	Elevator
Shall we forward as small lot?	Elfin
Will send shipping instructions by mail	Edentate
Shipping instructions for order (No.)	Edge
Enter order at your quotation of	Echo
Enter order as per our inquiry of	Ebonized
Send us bill of lading covering our order (No.)	Eaves
Will mail you to-day bill of lading covering order (No.)	Energetic
Ship with draft attached to bill of lading	Easel
Will ship your order	Enfeebled
When will car be shipped containing our order	Engender
Wire routing on shipment of our order	Enkindle
Routing on your shipment is as follows	Enlighten
Wire instructions	Elixir
Order (No.) has not been shipped	Elope
Your order does not specify steam or water. Wire which is wanted	Elusion
Change our order (No.) to read	Embalm
Referring to your order	Embankment
Referring to our order	Embargo
Do not find any order from you	Emblem
We cannot promise definitely, but will give best attention	Emboss
Include in car for ——— which left	Embrace
We cannot furnish	Emetic
Must have ——— at once. Can't wait for	Emigrant
Latter part of this week	Enriching
First of next week	Enslave
Latter part of next week	Entertainer

TABLE OF TIME

1 day	Swelling	12 days	Syenite
2 days	Swelter	1 week	Syllabic
3 days	Swerving	2 weeks	Sylphlike
4 days	Swiftmess	3 weeks	Symbolic
5 days	Swimming	1 month	Sagacious
6 days	Swingle	2 months	Symmetral
10 days	Swooning	3 months	Sympathetic

NUMERALS

To be used when giving quantities, order numbers, weights, dollars and cents, etc.

1	ON	6	SI	Repeat . . .	X
2	TO	7	VE	Dollars . . .	DO
3	TH	8	EI	Feet	FE
4	FO	9	NI	Discount . .	Dis
5	IV	0	OH		

EXAMPLES

10155. 1-on 0-oh 1-on 5-iv 5-x (used instead of repeating iv)—onohonivx.

\$146.80. 1-on 4-fo 6-si dollars do 8-ei 0-oh—onfosidoeioh.

1,100 feet. 1-on 1-x 0-oh 0-x feet—fe—onxohxfe.

14,000. 1-on 4-fo 0-oh 0-x 0-oh (oh is repeated to avoid having two x's)—onfoohxoh.

In writing telegram use all small letters and join together to make one complete word. To avoid confusion on long numbers it is sometimes advisable to print the characters. In that case, use all capitals, viz.: 1468-ONFOSIEI.

An easy method of deciphering can be used by separating every two letters, starting at the left, except where X appears

ivohxdotosi—iv oh x do to si—500 dollars 26 \$500.26

HEIGHT OF RADIATOR

	Inches High		Inches High
Nabbing	12½	Nappal	20½
Nadir	13	Narcissus	22
Naiad	14	Narcotic	23
Naggy	14½	Narrate	26
Nailer	16½	Narrify	32
Namesake	17	Narwhal	38
Napery	18	Nasal	44
Naptha	20	Nasturtium	45

NUMBER OF SECTIONS

	Sections		Sections
Oatmeal	2	Objective	8
Obdurate	3	Oblation	9
Obeisant	4	Oblique	10
Obelisk	5	Oblivion	11
Obesity	6	Oblong	12
Obfuscate	7	Oboe	13

NUMBER OF SECTIONS—Continued

	Sections		Sections
Obscurity	14	Occult	26
Obsequy	15	Occupation	27
Observance	16	Octant	28
Obsession	17	Octillion	29
Obstacle	18	Octonary	30
Obstinate	19	Occular	31
Obtrude	20	Oddity	32
Obtundent	21	Odeon	33
Obvention	22	Odorate	34
Obvolute	23	Offertory	35
Occasional	24	Offspring	36
Occident	25		

TAPPING INSTRUCTIONS

$\frac{3}{4}$ -inch single pipe	Tablature	$1\frac{1}{2} \times 1\frac{1}{4}$ -inch	Tamarind
$\frac{3}{4} \times \frac{3}{4}$ -inch	Tableau	$1\frac{1}{2} \times 1\frac{1}{2}$ -inch	Tandems
1 x $\frac{3}{4}$ -inch	Taciturn	$1\frac{1}{2}$ -in. single pipe	Tangency
1-in. single pipe	Taffeta	2 x $1\frac{1}{2}$ -inch	Tangling
1 x 1-inch	Tactician	2-inch single pipe	Tannery
$1\frac{1}{4} \times \frac{3}{4}$ -inch	Taffrail	2 x $\frac{1}{2}$ -inch	Tailor
$1\frac{1}{4} \times 1$ -inch	Tainless	$1\frac{1}{2} \times \frac{1}{2}$ -inch	Tame
$1\frac{1}{4} \times 1\frac{1}{4}$ -inch	Tailorless	$1\frac{1}{4} \times \frac{1}{2}$ -inch	Tamkin
$1\frac{1}{4}$ -in. single pipe	Talisman	1 x $\frac{1}{2}$ -inch	Tearing
$1\frac{1}{2} \times 1$ -inch	Talmud	$\frac{3}{4} \times \frac{1}{2}$ -inch	Tay
Tapped right hand			Tibal
Tapped for extreme top of first section			Timorous
Tapped for extreme top of second section			Tincture
Tapped underneath radiator bottom of first section			Tinkling
Tapped underneath radiator bottom of second section			Tinseled
Tapped for $\frac{1}{4}$ -inch air valve			Tipstaff
All to have extra high solid legs so that distance from floor to center of supply tappings shall be—	inches		
Tapped left hand			Titular
Tapped for single pipe steam as per list			Ticklish
Tapped for double pipe steam as per list			Tidiness
Tapped for top supply and bottom return on same end			Tidology
Tapped for top supply and bottom return opposite ends			Tillage
Tapped for both supply and return tappings at bottom			Timbrel
Tapped regular as per list			Timidity
Tapped for Weber System			Tinning
Tapped for Paul System			Tidbit
Tapped for Webster System			Tiby
Tapped at "A"	Traceable	Tapped at "E"	Traducent
Tapped at "B"	Tachea	Tapped at "F"	Tractarian
Tapped at "C"	Trackless	Tapped at "G"	Tractility
Tapped at "D"	Tractable	Tapped at "H"	Tradeful
			Tradition

NEW TRITON PLAIN RADIATION

Water		Steam
Fable	38-1	Fabulous
Facet	32-1	Facial
Faction	26-1	Fad
Fail	22-1	Faint
Faithful	20-1	Falchion
Fallacy	45-2	Falsehood
Fame	38-2	Family
Famish	32-2	Fanatic
Fandango	26-2	Fang
Fantasia	22-2	Farnia
Farrago	20-2	Fascinate
Fastening	45-3	Fastland
Father	38-3	Fatigue
Fauna	32-3	Fawn
Fealty	26-3	Feasible
Febrile	22-3	Federal
Feldspar	18-3	Felony

Water Vented for Steam

Felucca	44-4	Finest
Fender	38-4	Fiddle
Ferment	32-4	Fido
Ferocious	26-4	Fingen
Fertile	22-4	Fireman
Festal	18-4	Firm
Fetch	20-5	Fidelity
Fetlock	17-5	Filing
Feudal	14-5	Filbert

TRITON RADIATORS

Triton one-column, ornamental, steam	Cavalier
Triton one-column, ornamental, water	Cavalry
Triton two-column, ornamental, steam	Censure
Triton two-column, ornamental, water	Centaur
Triton three-column, ornamental, steam	Caution
Triton three-column, ornamental, water	Cause
Triton four-column, ornamental, steam	Cave
Triton four-column, ornamental, water	Caverns
Triton five-column, ornamental, steam	Crew
Triton five-column, ornamental, water	Creep
Triton Flue, steam	Candy
Triton Flue, water	Clay

CAPITOL RADIATORS

Puritan one-column, steam	Handy
Puritan one-column, water	Haggard
Puritan two-column, steam	Heather
Puritan two-column, water	Hickory
Puritan three-column, steam	Hillock
Puritan three-column, water	History
Puritan four-column, steam	Halibut
Puritan four-column, water	Halter
Puritan five-column, steam	Hanker
Puritan window, five-column, water	Happiness
Florentine one-column, steam	Hamlet
Florentine one-column, water	Haughty
Florentine two-column, steam	Harrow
Florentine two-column, water	Hanson
Florentine three-column, steam	Hammer
Florentine three-column, water	Harbor
Florentine four-column, steam	Hinder
Florentine four-column, water	Harass

GRECIAN RADIATORS

Grecian one-column, plain, steam	Entity
Grecian one-column, plain, water	Entwine
Grecian two-column, plain, steam	Enervate
Grecian two-column, plain, water	Enclouded
Grecian three-column, plain, steam	Endure
Grecian three-column, plain, water	Enchase
Grecian four-column, plain, steam	Enamour
Grecian four-column, plain, water	Endivement

ATHENIAN WALL RADIATORS

Athenian Wall, 5-foot section, steam	Contraband
Athenian Wall, 5-foot section, water	Cancerate
Athenian Wall, 7-foot section, steam	Clincher
Athenian Wall, 7-foot section, water	Contour
Athenian Wall, 9-foot section, steam	Continue
Athenian Wall, 9-foot section, water	Cruciform

INDIRECT RADIATORS

Pin Indirect, steam, 10 feet	Export
Pin Indirect, water, 10 feet	Expose

INDIRECT RADIATORS—Continued

Pin Indirect, steam, 15 feet	Caxton
Pin Indirect, water, 15 feet	Ceiling
Pin Indirect, steam, 20 feet	Club
Pin Indirect, water, 20 feet	Cudgel
Not assembled	Currycomb
Assembled with Push Nipples	Curliness
Assembled with R. and L. Screw Nipples	Cutwater
Arranged for Wall Brackets	Culinary

DISCONTINUED PATTERNS FOR REPAIRS ONLY

Oldstyle

Triton one-column, plain, steam	Cry
Triton one-column, plain, water	Crayon
Triton two-column, plain, steam	Cow
Triton two-column, plain, water	Calf
Triton three-column, plain, steam	Canvas
Triton three-column, plain, water	Cart
Triton four-column, plain, steam	Culpable
Triton four-column, plain, water	Cultivator
Triton five-column, plain, steam	Cunning
Triton five-column, plain, water	Curator
Sun two-column, steam	Ennoble
Sun two-column, water	Enode
Sun three-column, steam	Enliven
Sun three-column, water	Enmity
Utility six-column, steam	Enjoyment
Utility six-column, water	Envenom
Champion Indirect	Englut

SPECIAL RADIATORS

Circular for water	Playmate
Circular for steam	Plaything
Corner for water	Plea
Corner for steam	Pleader
Dining room for water	Pleasance
Dining room for steam	Pleasure
With saddles for marble top	Plebeian
With spikes in end section, for marble top	Plenal

ATHENIAN PANTRY RADIATOR

No. 1	No. 2	No. 3	No. 4	No. 5
Pliable	Pliform	Plighter	Plodding	Plough

RADIATOR MISCELLANIES

Washed and cleaned for vacuum system	Probation
Triton Three-column Box Bases	Probative
Triton Flue Box Bases	Probity
Puritan and Florentine Box Bases	Procreate
Triton Wall Boxes	Procedure
Sun Box Bases	Procession

ATHENIAN RADIATOR BRACKETS

R No. 1	R No. 2	R No. 3
Proclivity	Proctor	Prodigal
S	T	U
Prodigious	Professor	Profuse
		Profusion

RADIATOR REPAIRS

Supply Steam Leg Section	Ablative
Supply Steam Leg Section, with supply and return at bottom same end	Ablution
Return Steam Leg Section, open hub	Abnegate
Return Steam Leg Section, blank hub	Aboard
Supply Water Leg Section	Abolition
Return Water Leg Section	Abreast
Intermediate Steam Section	Abroach
Intermediate Water Section	Abrogate
Middle Steam Leg Section	Abrupt
Middle Water Leg Section	Abscess
Slip Nipples for steam radiators	Abscond
Slip Nipples for water radiators	Absolver
Bushings, 2 x $\frac{3}{4}$ inches	Abstain
Bushings, 2 x 1 inches	Abstemious
Bushings, 2 x $1\frac{1}{4}$ inches	Abstinence
Bushings, 2 x $1\frac{1}{2}$ inches	Abstruse
Plugs, 2 inches	Abundance
Plugs, $1\frac{1}{2}$ inches	Abutment
Screw Nipples for steam radiation	Acacia
Screw Nipples for water radiation	Academic
Right and Left Screw Nipples with hexagon centers	Acceding

CAPITOL-WINCHESTER BOILER CODE

No.	Steam	Complete Set of Grates
3130	Gab	Rabbi
3140	Gabel	Raccoon
3230	Gabion	Racket
3240	Gadder	Raddle
3330	Gadfly	Radiate
3340	Gaily	Radish
3350	Gain	Raglan
3440	Gait	Raiment
3450	Gale	Rampant
3460	Gallic	Ransack
3540	Gallop	Rebel
3550	Gambol	Recluse
3560	Game	Recoup
3640	Gape	Redowa
3650	Garb	Refuge
3660	Garlic	Regatta
No.	Water	Complete Set of Grates
4130	Madcap	Fakir
4140	Magic	Falcon
4230	Magnate	Fantasia
4240	Majestic	Faro
4330	Malady	Farmer
4340	Mandolin	Fathom
4350	Marine	Figaro
4440	Marquis	Flagon
4450	Mateless	Fluke
4460	Matin	Folio
4540	Matron	Fontein
4550	Mattress	Frappe
4560	Mayas	Fresco
4640	Maypole	Friction
4650	Mediator	Frontier
4660	Military	Fusion

CAPITOL BOILERS AND

FURMAN SECTIONAL BOILERS

Size	Steam	Water	Complete Set of Grates
184	Yarn	Packet	Gyrated
185	Yawl	Paddle	Gyration
186	Year	Painter	Gyratory
187	Yell	Parent	Gyromancy
225	Yean	Zed	Gencive
226	Yearling	Zenana	Genope
227	Yeast	Zest	Gerboise
228	Yelk	Zetic	Gerant
276	Yelp	Zeugma	Gite
277	Yerk	Zimone	Giron
278	Yew	Zoogeny	Grafter
279	Yelder	Zoolite	Gisant
337	Younker	Zoopher	Guipon
338	Yucca	Zotoma	Gunstaf
339	Yule	Zygoma	Gymnote
340	Yulger	Zymic	Gulot
387	Yardarm	Zonner	Glossiness
388	Yawning	Zoccolo	Glottal
389	Yernut	Zinkenite	Glover
390	Yieldance	Zechstein	Glucose
391	Youngster	Zealless	Glycerin

FURMAN ROUND SECTIONAL BOILERS

Size	Steam	Water	Complete Set of Grates
16-0	Slush	Crane	Glair
16-1	Ice	Lark	Glade
16-2	Fog	Bobolink	Guzzle
19-0	Dry	Dove	Glassy
19-1	Snow	Sparrow	Gurgle
19-2	Rain	Robin	Gusset
22-0	Damp	Thrush	Gust
22-1	Hail	Canary	Guttural
22-2	Frost	Wren	Gutter
22-3	Foiling	Waspish	Gimbal
25-0	Wet	Oriole	Gypsy
25-1	Dew	Grouse	Gynarchy
25-2	Mist	Quail	Gymnast
25-3	Cloudy	Squab	Gypsum
29-0	Flood	Pelican	Gleaner
29-1	Sleet	Peacock	Gleaming
29-2	Storm	Parrot	Glee
29-3	Blizzard	Eagle	Gluten

IMPROVED CAPITOL BOILERS

25 SERIES

No.	Steam	Water	Complete Set of Grates
1425	Abate	Alliance	Unabated
425	Ambush	Anvil	Unambushed
1525	Azure	Artic	Unazured
525	Archive	Anchor	Unarchived
1625	Abdicate	Antarctic	Unabdicated
625	Atlas	Applause	Unatlased
1725	Abduct	Album	Unabducted
725	Alcove	Attic	Unalcovered
1825	Abet	Antler	Unabetted
825	Abandon	Area	Unabandoned

37 SERIES

1537	Cursory	Curtain	Uncursed
537	Caliper	Cypress	Uncalipered
1637	Camera	Cactus	Uncamed
637	Cycloid	Cabbage	Uncycloided
1737	Camphor	Culvert	Uncamphored
737	Caller	Cabinet	Uncalled
1837	Curvity	Cadet	Uncurvited
837	Cuttle	Cynic	Uncuttled
1937	Candid	Calendar	Uncalendared
937	Camber	Caboose	Uncambered
2037	Canine	Calico	Uncanined
1037	Cutlass	Cackle	Uncutlassed

48 SERIES

1748	Layman	Lancer	Unlanced
748	Lariat	Laborer	Unlariated
1848	Leader	Language	Unleadered
848	Lasso	Lackey	Unlassoed
1948	Lecture	Lantern	Unlectured
948	Latent	Lagoon	Unlatented
2048	Legacy	Lanyard	Unlegated
1048	Lather	Ladder	Unlathered
2148	Legend	Lapel	Unlegended
1148	Laurel	Lambkin	Unlaureled
2248	Luminous	Lupine	Unluminated
1248	Lymph	Lyric	Unlymphed
2348	Lucrative	Lullaby	Unlucrative
1348	Lutarius	Luxury	Unlutarated

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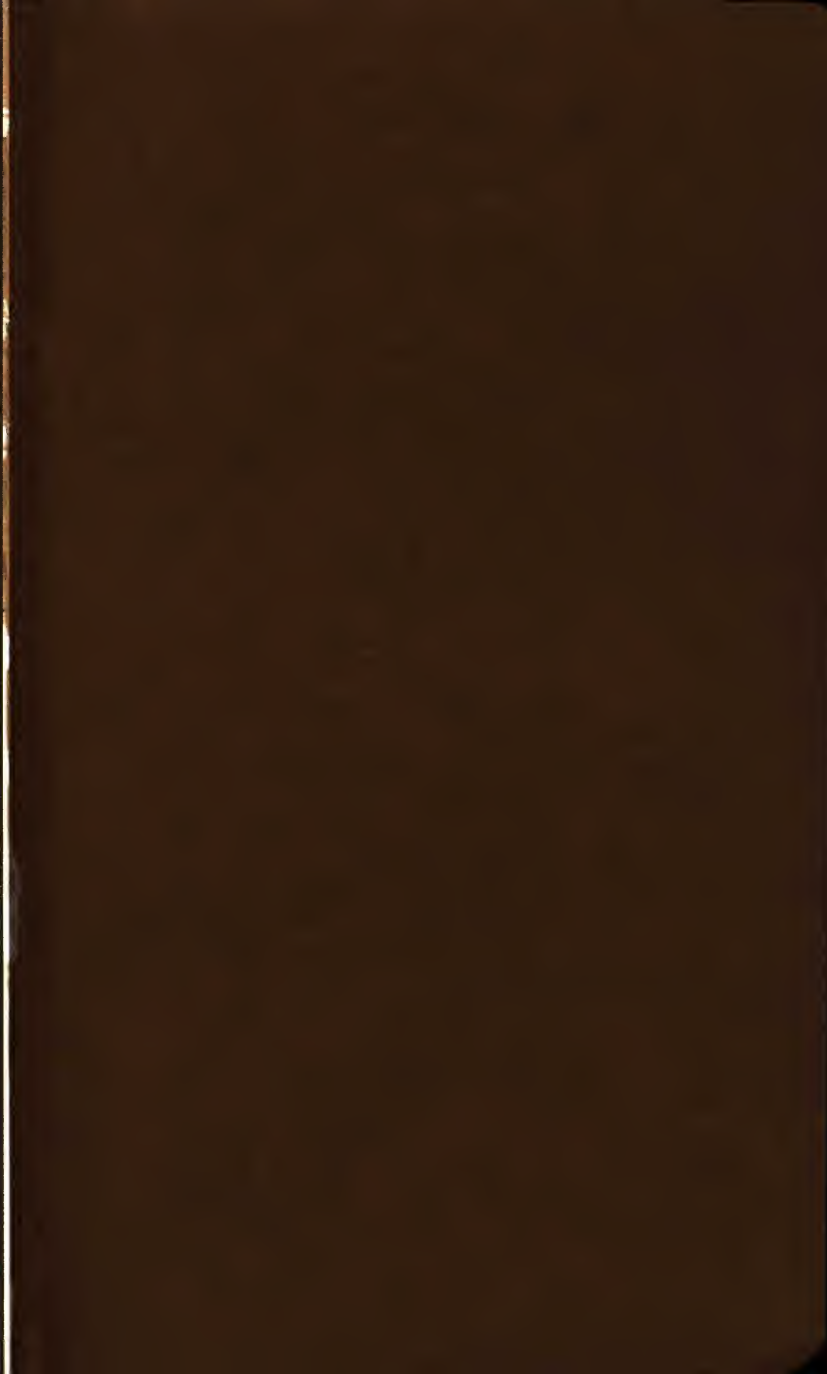
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